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MOTOR AGE

Glidden Pathfinders In Home Stretch

EMPORIA, Kan., May 4—Special telegram—Dai Lewis and his fellow-scouts are in the homestretch and the Chalmers 30 is racing for the wire, which in this instance represents Chicago, where the 1910 Glidden tour will end. In the last week the pathfinders have left Texas, crossed Oklahoma and are well into Kansas. Missouri follows and Nebraska is next, so as to take in Omaha, and then comes the last dash.

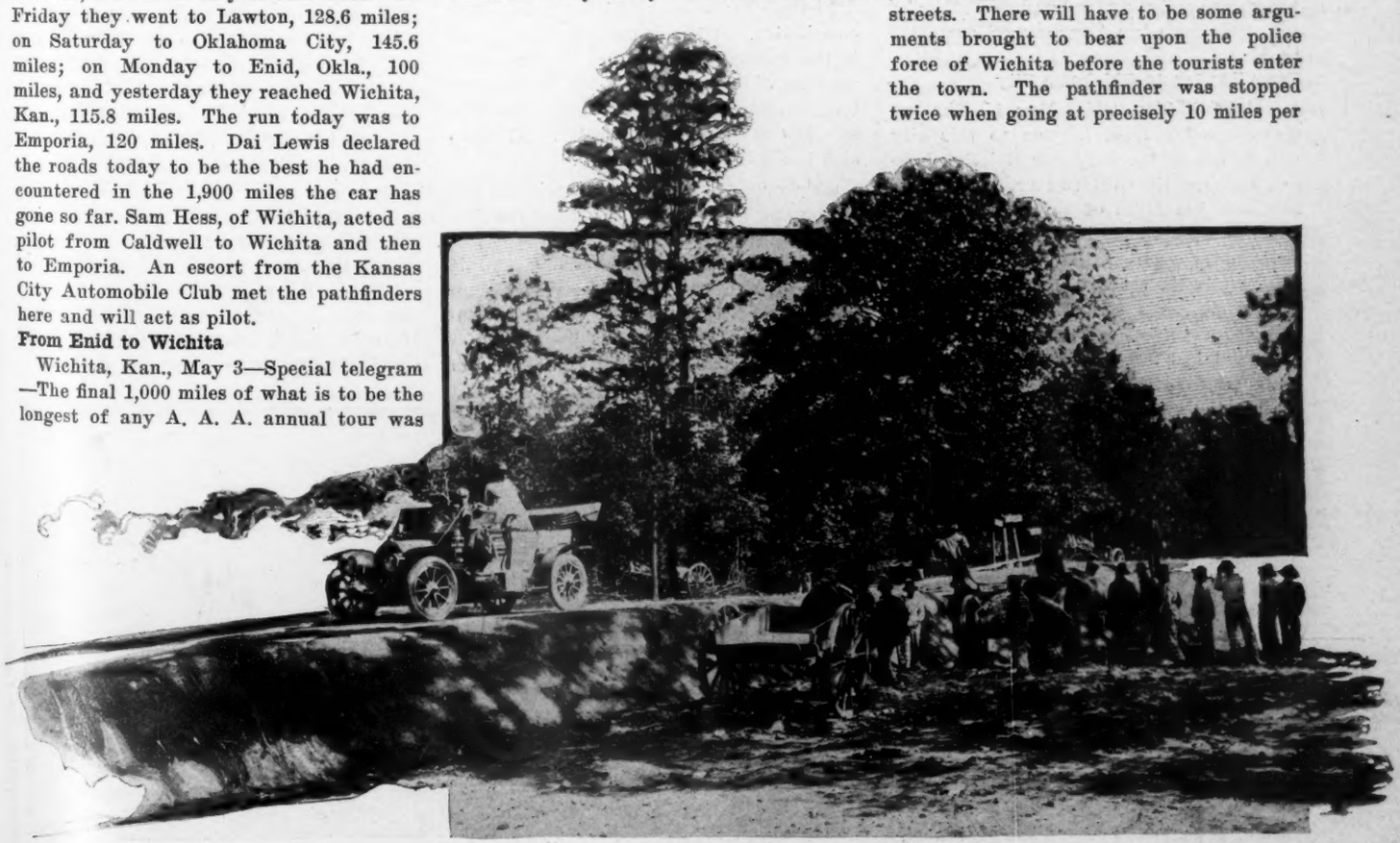
Since last Wednesday the scouts have made good progress. On Thursday they made a short run from Fort Worth to Decatur, a distance only of 38.4 miles. On Friday they went to Lawton, 128.6 miles; on Saturday to Oklahoma City, 145.6 miles; on Monday to Enid, Okla., 100 miles, and yesterday they reached Wichita, Kan., 115.8 miles. The run today was to Emporia, 120 miles. Dai Lewis declared the roads today to be the best he had encountered in the 1,900 miles the car has gone so far. Sam Hess, of Wichita, acted as pilot from Caldwell to Wichita and then to Emporia. An escort from the Kansas City Automobile Club met the pathfinders here and will act as pilot.

From Enid to Wichita

Wichita, Kan., May 3—Special telegram—The final 1,000 miles of what is to be the longest of any A. A. A. annual tour was entered today by the pathfinding car which ran from Enid, Okla., to Wichita, a distance of 115.8 miles over roads which are on a par with the first section of the 216-mile run from Oklahoma City to Wichita. There was something very much resembling a cloudburst in this district Sunday night, but it did no appreciable damage to the hard dirt and clay highway.

Caldwell, an old-time cow town, from which the glamor has been rubbed by agriculture and prohibition, was the first passed after the pathfinder left Oklahoma this afternoon. Here the pilot car, driven by McClellan, of Oklahoma City, and carrying A. F. Binns, of the same place, turned back. Mr. Binns is chairman of the runs and tours committee of the state association and McClellan, its first member. McClellan by the time he reached Oklahoma City today will have traveled 600 miles in guiding the pathfinder and a much greater distance in selecting the excellent roads along which the tour will pass in traversing the state. McClellan met the Chalmers at Bowie, Tex. There are no more indications along the way that this was ever a cattle-raising country. The farmer is king in Kansas. There are a few hamlets along the Glidden trail from Enid north and one city of 8,000 at Wellington, Kan., the seat of Sumner county. There are fifty-six cars in Wellington.

Wichita, which may be a Sunday stop for the tour, looks for 70,000 in the next census report and 550 motor cars on its streets. There will have to be some arguments brought to bear upon the police force of Wichita before the tourists enter the town. The pathfinder was stopped twice when going at precisely 10 miles per



GLIDDEN PATHFINDERS STRIKE A FINE HIGHWAY CONSTRUCTED BY CONVICT LABOR

hour and instructed that 4 was the limit on certain streets. Horses, it appears, are immune from this order and can go at 10 or 12 miles.

Oklahoma City to Enid

Enid, Okla., May 2—Although the pathfinder took but an afternoon's run of 100 miles today, its journey marked another transition in the Glidden route. The plains and cattle ranges which press close to Oklahoma City, were left behind for the rich, undulating farming country of northern Oklahoma. After Oklahoma City, Guthrie was passed through. This city is the capital of the state, although Oklahoma City is confident of wresting this honor away from its neighbor. Guthrie has 18,000 inhabitants and but thirty motor cars, most of which have been purchased within a year. Enid, tonight's stop, is a wealthy farming center with a population of 20,000. One hundred and fifty cars are owned here.

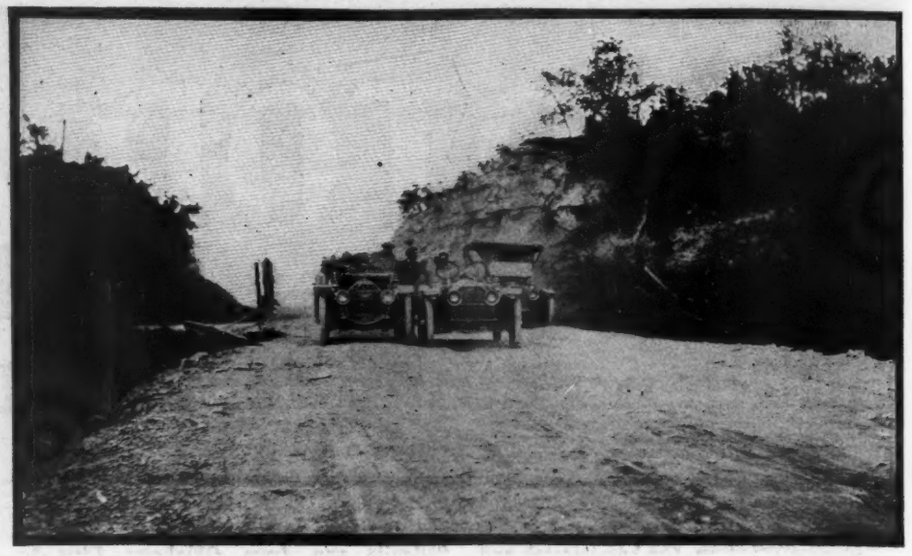
The roads encountered today are about equally divided between fair rural highways and the hard, level clay which delights the motorist's heart. There is some sand between Guthrie and Enid, but the business men of Guthrie already have signed a contract to have this portion of the road put in shape with straw the day the tour passes. The Chalmers 30 is being escorted by a pilot supplied by the Oklahoma State Automobile Association. There has been a drop of 40 degrees in the temperature within the past 48 hours and the pathfinding crew, which resorted to khaki and the thinnest clothing possible a few days ago, did considerable shivering today.

From Lawton to Oklahoma City

Oklahoma City, Okla, May 1.—The run mapped today from Lawton to this city will be one of the very few strictly pleasure jaunts of the Glidden tour. The course lies over 145 miles of natural dirt roads, which are practically beyond improvement. It includes some of the most interesting territory in the country, and winds up at a marvel city, just turned 21 years of age, and yet a perfect metropolis, as solid as though it had 200 years behind it, and as progressive as the most callow boom village on the prairie.

Starting from Lawton the pathfinder was steered through the Fort Sill military reservation, 56,000 acres in extent, where old Chief Geronimo, with the bloodiest record of any Indian in United States history, died a few months ago. The tour route skirts the Witchita mountains through the region where Colonel Roosevelt did his wolf-hunting 5 years ago. Fort Sill is the military center of the United States, and a $20,000,000 post is being constructed there. Seventy of the old Apache warriors are held prisoners on the reservation.

The enthusiasm of the Chickasha motorists who came thirty-seven strong, a distance of 140 miles to extend the glad hand, led Lewis to include that city on the route, the roads being perfect in and out of the town. There are 10,000 wideawake citizens in Chickasha, and a busy chamber of commerce. Not more than seventy-five cars, mostly new ones, are owned in Chickasha.



TEXANS ESCORT THE PATHFINDER OUT OF DALLAS

After leaving Chickasha, the Canadian river was crossed. Here ½ mile of troublesome sand was encountered, but the El Reno contingent of the Oklahoma Automobile Association promises to have this stretch paved with boughs and straw so that there will be no delay when the tour comes along.

El Reno ranks with Chickasha as a live community. It has 14,000 inhabitants and is the general headquarters of the southwestern division of the Rock Island system. A club with a membership of thirty-five has been formed recently. El Reno also has a big packing house.

Oklahoma City will be a surprise to any of the tourists who will see it for the first time. A score of years ago its site was barren plain. Now 60,000 people call it home; it has 110 miles of paving, more than that of all the cities in Texas combined; some ten-story buildings and a chamber of commerce that is on the job every minute. Its motor club, with a membership of 180, has the same staff of officers as the state association: President, A. O. Campbell; vice-president, Guy E. Blackwellder; secretary, J. W. Densford. The association is supplying pilots through the entire state, and is already busy at the task of putting the finishing touches on roads which nature turned out in splendid shape. There are about 750 motor cars here, and the market is far from glutted.

From Dallas to Lawton

Lawton, Okla., April 30—The 207-mile run mapped from Dallas to Lawton by Dai Lewis will be one of the most comfortable and generally delightful of the entire route. The very worst the road has to offer is small stretches of shallow sand, its average is good dirt roads and its best the springy, straightaway prairie highways that inspire speed and confidence. Lewis said tonight that he had seen better natural roads today than on any other previous pathfinding tour.

The Chalmers road-hunter left Decatur this morning, having come 9 miles from Martin's ranch the evening before, and made 128.6 in easy running today. The

LEWIS AND HIS MATES APPROACHING NORTH FORT WORTH, TEXAS

JUST A SCHOOLHOUSE NEAR SAGINAW, TEXAS, HIT BY A CYCLONE

pathfinders were met at Bowie, Tex., by delegations from Oklahoma City and Lawton, headed by J. W. Densford, secretary of the Oklahoma Automobile Association. They had selected a route into Lawton and piloted the pathfinder all the way. At Terral five cars from Chickasha, Okla., met the party and strongly urged Lewis to run the Glidden route through their city. They had come 140 miles to make the request, which was taken under consideration by the A. A. A. scout.

Red river, which was crossed at Fulton, Ark., again was negotiated today, but instead of having recourse to a primitive ferry, the cars bumped over the Rock Island bridge. A private car bearing officials of the Rock Island system was on the division today, completing arrangements to show some real hospitality to the Glidden contestants. A plank road will be built over the bridge, which is 1,800 feet long, and an approach on either side, totaling about 1½ mile in length, will be constructed. H. M. Halleck, division superintendent and general manager of the road in this state, is the moving spirit in this rather unique undertaking for a railroad. A dispatcher will be stationed at the bridge the day the tourists come through to obviate any possibility of accident.

The towns on the Dallas-Lawton run are none of them very large or pretentious, but all have the brand new, Sunday-best aspect of the western boom section and motor cars are no rarity. In Lawton, which boasts 3,000 inhabitants, there are more than 100 cars. El Reno, which sent a welcoming party to Bowie, Tex., has the one motor car factory in the state, the Pioneer, which will produce 200 machines this year. El Reno probably will be passed through tomorrow. Bowie, where the pathfinder was met by the Oklahoma enthusiasts, has 5,000 people and but five cars, although it is in the prosperity procession.

The country in which the tour route is now being laid, will remind the contestants in some degree of some of the prairie country traversed last year. It is rolling ranch land, for the most part, and the motor car fever which permeates Texas extends over the border of this youthful state.

Incident of the Tour

While the Glidden tour pathfinder has stimulated much interest in good roads and motoring along its route from Cincinnati through the south and west, it has offset, in some measure, this benefit by ruining the reputation of Uncle Luke Crosswait, up on Buffalo creek in Tennessee.

Uncle Luke has lived on Buffalo creek since Davy Crockett was a small child. His log cabin hugging a hillside on the border of the creek bottom has come to be as natural a part of the landscape as the gum trees and oaks.

The Chalmers, with Lewis and his party arrived at Uncle Luke's place along about sundown after futile attempts to ford Buffalo creek, which was over its banks. Joe Gardham drove the car over an old logging road, piloted by two grandchildren of Uncle Luke, who said the pathfinders might find shelter at his house. The road was so rough and steep that a red squirrel would find the walking very bad. Lewis, succeeded in getting Uncle Luke to admit the travelers. They were fed the inevitable supper of fried pork and eggs, but were relieved in the morning by a change of menu. The eggs had been fried on both sides the night before, but for breakfast Mrs. Crosswait permitted them to gaze upward.

Sunday dawned bright and clear with Buffalo creek rapidly subsiding. The road hunters had made the discovery that Uncle Luke was intensely religious. His theology was of the sturdy, uncompromising type that actuated those sterling forefathers of ours in their highly commendable efforts to weed out witchcraft in Salem some years ago.

"Will you please hitch up your team and pull our machine across the creek?" asked Dai.

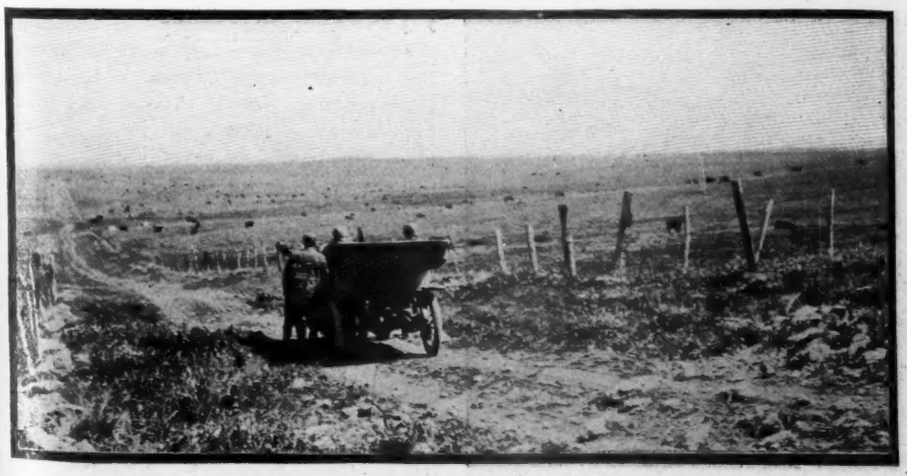
"Sorry, brother, but I cyan't possibly do it," drawled Uncle Luke. "I'd pow'ful much like to give you all a lift, but this is the holy Sabbath and labor is forbidden by the good book."

Here was a lovely situation, but Dai rose manfully to the occasion. He carried the family bible out on the porch of the Crosswait cabin and hunted diligently therein. At last he dug up the verse concerning the righteousness of pulling an ox out of a pit into which it had fallen on the Lord's day. He augmented this with a passage refering to brotherly kindness, first aid to enemies, etc.

"Now our motor car isn't exactly an ox, but it's the nearest thing to it procurable where we come from, and there she is, stalled on the muddy brink of your beautiful little creek," pleaded Dai.

He won the day, of course, and Uncle Luke got out the double-whiffletrees and harnessed Jessie and Kate, a gray and roan whose total ages were 67 years.

The team was hitched to the Chalmers and Uncle Luke perched himself on the bonnet while his second wife stood on the bank in hysterics and the entire community gathered to see the performance. They were all related, either by blood or marriage, and there were about thirty men, women and infants lining the shores of



VAST EXPANSE OF PRAIRIE OUT OF HICKS, TEXAS

PETTY, TEXAS, IS A TYPICAL LONE STAR STATE TOWN

Buffalo creek, watching the efforts of their countryman.

The horses were run out into the water and Uncle Luke, with a freshly cut hickory gad in his hand, gave the signal to pull. Instead they both stood up on their hind legs and apparently endeavored to shake hands with each other. Uncle Luke applied the gad vigorously and shouted at the top of his old cracked voice. More acrobatics—but no pulling!

It was Uncle Luke's first motor car ride and here was his team and himself on trial. His dander was up and he hopped into the creek and waded to his horses's heads. Again he gave the command to proceed, emphasizing it with the gad, and again there was rearing and champing of bits—but nothing else.

Gathering the reins tightly in one hand, Uncle Luke brought the whip down over the flanks of the mares with a mighty swish and at the same time shouted:

'Ged ap, yuh she-devils! ged ap, gol dern yeh!''

Like magic they settled into their collars and dragged the heavy machine to dry land on the opposite bank with a rush. But Uncle Luke's fame in the district was blemished. He had used profane expletives and all his kin-folk had heard him. His second wife says it will be months before she will look her relatives in the face.

Pathfinders in Western Territory

Martin's Ranch, Tex., April 29—The pathfinder crossed from the south into the west proper in its run from Dallas to Fort Worth Wednesday. Dallas has few marks of the cattle country about it, but Fort Worth proudly terms itself the cultured cow town. The road-hunters were entertained by the dealers' club of Fort Worth and the Star-Telegram and Record at a dinner in the Worth hotel and found that men who have risen to fortune from a cow puncher's saddle are now putting the same enthusiasm into motoring that they did into broncho-breaking a decade or so ago.

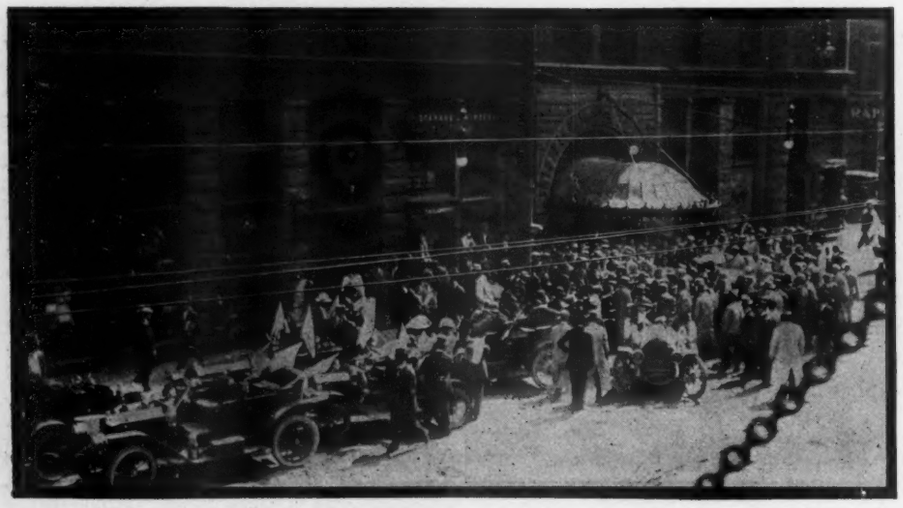
Mayor William Davis, Colonel Louis J. Wortham, general manager of the Star-Telegram, Colonel H. E. Crowley, former secretary of the Cattle Raisers' Association of America, and now president of the Dallas Dealers' Association, all were educated in the rough life of the plains and all are deeply interested in the development of motoring in this part of the country. Fort Worth has a population of 65,000 and 700 cars, mostly of the higher-priced makes, are owned there. A million and a half was spent for motor cars in 1909.

The pathfinding car left Fort Worth Thursday following a pilot and spent Thursday night at Martin's ranch, 29 miles north. Oklahoma City, via Terral, is the route for the next day's run. Decatur, a town of 2,000, seat of Wise county, is the most important place between Fort Worth and Terral.

Pilots will escort the pathfinder into Oklahoma City. The roads through the stock country are, to a large degree, excellent, being of the resilient prairie type or macadam pike with exception of small stretches of cobblestone which would not total a mile between Fort Worth and Martin's ranch.

Next to his wife and family and a big cigar Lewis relishes a good road. He knows all about roads and preaches the gospel of highway improvement in every town on the Glidden pathfinding trip.

IN WOODS AT DE KALB, TEXAS



DALLAS EXTENDS A WELCOME TO THE SCOUTS

Dai Lewis Becomes Curious

Probably the very best going the scouts has encountered was 10 miles of hard clay pike entering Dallas. The county road commissioner's take great pride in that pike and are rapidly extending it. A car can go 40 miles an hour over this road while a man reads a newspaper in the rear seet. Coming into Dallas the pathfinder, escorted by President Sacksteder, of the Dallas Dealers' Club, came to a spot where a score of men with mules and scrapers were busy building more pike.

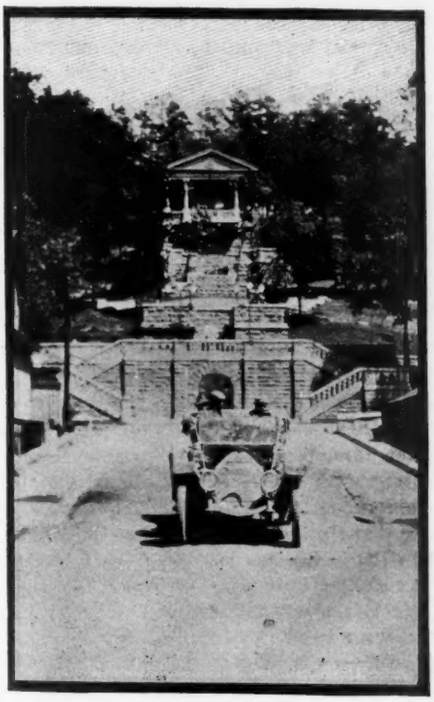
''That's what I like to see,'' Dai exclaimed. ''Look at all those sturdy farmers digging away to improve the road. That's enterprise. Those men have the right spirit and more foresight than the average. Say, I wonder what that fellow

over there with a shotgun thinks he's goig to get here?''

Dai pointed to a lean, swarthy young man on a pony.

''He's waiting for one of those enterprising road-makers to slide out of place. He's a prison guard and those are convicts,'' said Sacksteder.

The boom belt starts at Memphis and extends in a southwesterly direction out through Arkansas and Texas. Towns have doubled in population in the past decade and land values are hopping steadily upward. Brand new school houses, churches and libraries are on every hand. Every city has a progressive league, a business man's club or a similar organization whose motto is boost. The present census is looked forward to with interest which can scarcely be described as breathless since every loyal citizen of every village, town and hamlet



GOVERNMENT RESERVATION AT HOT SPRINGS

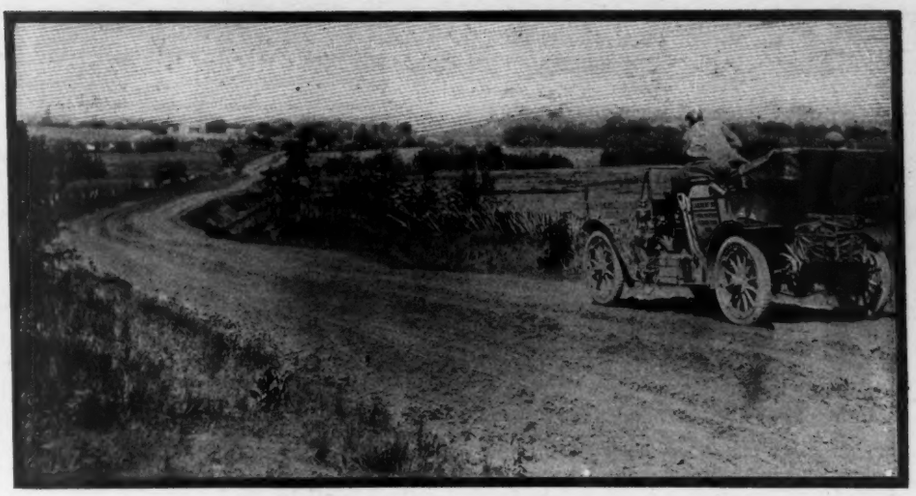
in the boom belt is using his imagination to its fullest extent in estimating the population of his home burg. The scouts gave up trying to learn the size of the towns they passed through.

Guessing at Population

One place in Texas containing public a square, with a band stand—all Texas towns have the same arrangement—also one hotel, a postoffice and the corpse of a saloon, killed by local option, and one general store, was passed through. Lewis asked a gentleman in a broad-brimmed hat how big the place was.

''Ten thousand, suh,'' the native replied, with a proud smile.

The towns between Texarkana and Dallas are visible one to the other over the rolling prairie. At the next place Dai asked, ''How big a place is Peachbloom, back there?''



BONHAM, TEXAS, LOOMS UP AHEAD OF PATHFINDERS

''Bout 300, I think, countin' all on the rural routes and the niggers.''

''How large is your town?'' the scout inquired. The home-grown citizen straightened himself.

''A leetle under 15,000,'' he responded.

At the next place his estimate was cut to 850, and so on across the plains until Dallas and Fort Worth were passed. There was a delegation from Fort Worth in Dallas to greet the explorers.

''How large is Fort Worth? How large is Dallas?'' were the questioned put, successively, to the Fort Worth and Dallas motorists.

''Dallas has about 75,000; Fort Worth 73,000,'' said the Fort Worthies.

''Dallas has about 100,000; Fort Worth perhaps 45,000,'' said the Dallasians.

Louisville's Glidden Plan

Louisville, Ky., May 1—Elaborate preparations are being made by the officials of the Louisville Automobile Club for the reception and entertainment of the contestants in the Glidden tour, who, it is expected, will spend the night of June 15 in the Falls City. A fine program is being arranged. At about 6 o'clock on the afternoon of June 15 the contestants are expected to begin arriving here. The Gliddenites will be met on the road between this city and Shelbyville, Ky., by a party composed of members of the Louisville Automobile Dealers' Association and other local motor enthusiasts. The escort will consist of probably thirty cars. The parking place for the cars probably will be on Library square. This is located on York street between Third and Fourth avenues, and has ample space to take care of all cars in the tour.

The entertainment for the Gliddenites will consist of a reception to be held at the Seelbach hotel in the evening. The driver of each car will be given a souvenir of his visit to Louisville. This souvenir will probably consist of a sample of Kentucky's whiskey and tobacco, neatly arranged in a nice little package.

The proposed run to Indianapolis by the Louisville Automobile Dealers' Association to be held May 29, is fast nearing completion, so far as details are concerned. A committee of dealers will, some time the coming week, go to Indianapolis to arrange hotel accommodations for those who go on the trip. Between fifty and seventy-five cars are expected to take part in the run. The local party will be present to witness the opening contests in the Indianapolis speedway meet on Monday, May 30.

WOODLAND TRAIL ENCOUNTERED AFTER LEAVING DOBYVILLE

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Value of a National Tour

IF the 1910 tour for the Glidden and Chicago trophies is to finally end in the selection of a winner for each trophy in the run from Cincinnati to Chicago by way of Dallas, Texas, it will fail in more than 50 per cent of its mission as a tour. This national tour has a manifold object: It is conducted primarily for the manufacturer who is looking for new fields for selling cars and wants to revive trade in old territories; it is conducted also for the general benefit of motoring, in order that the motor car shall be kept in the public eye, in order that its prowess shall be on the tongues of the people, and in order that the press shall keep it to the fore; and it also is conducted for the benefit of good roads, although heretofore little if any actual permanent road-building results have been direct and immediate outcomes of the tour. This apathy towards the good road cause has been an error, and it is to be hoped that the tour this year will be more productive in stimulating a desire to participate in permanent good road construction.

FROM a viewpoint of good roads the New York-Atlanta tour of the past fall stands a leader. This was directly due to the aggressiveness of the press in various cities offering cash prizes for so many miles of road work done. As a result miles upon miles of road were built between the pathfinding expedition and the tour proper. What is the result? That section of the south has had a big tour, but greater by far is the lesson it has learned by the real road-building done. The tour will be forgotten in the touring sense, but the stimulus given to good roads will go on, expanding from season to season, and annually produce miles of new roads, so that the inevitable conquest of the south will have been accomplished by chain gangs of prisoners from the jails and prisons who have been pressed into the road-building business in so many states.

ON this year's Glidden-Chicago pathfinding tour, a special A. A. A. representative is accompanying the pathfinder car, one of whose objects it is to develop the good roads cause. He is appointing good roads committees for each day of the tour, there being four or six resident representatives for each 200 miles, making in all, perhaps, a good roads committee of seventy or more for the 2,500 miles of road traveled. Each group of six in this committee will be given charge of the roads through its territory, and upon it will develop the task of securing state or other aid in improving the roads. If these various committees do their work, much road-building will be started, but if they sit idly by and just rush into the limelight the day the tour passes through their section the sum of their efforts will be zero. That there are going to be results is assured already, because in certain sections the convicts were turned loose on the highways before the pathfinder passed through and now several miles of roads are finished as a direct result of the 1910 Glidden.

THE good roads movement can benefit still further as a result of the Glidden-Chicago tour, that is if the people desire such. Although it is the acknowledged duty of state boards to signboard routes this is not done, and it will require the setting of an example by the local motorists before the state takes the matter up. If clubs along the route would erect signboards in their vicinity, there would be one more excellent and tangible result of the tour. There is no reason why every mile of the route from Cincinnati to Chicago should not be so placarded, because every mile of road traversed is part of some main route and should be permanently marked as such.

Instruction Books Needed

"I NEVER would have bought that car if I had read this instruction book before I closed the bargain," said a manufacturer of machinery recently after he had made a careful study of every page and every chapter in the book. So anxious was this man to know all about his new 1910 car, which was his first, that for upwards of 1 hour every night for nearly a month he and a son had read the book through and through, adding a few lines where the text was meager, and making a dozen margin lead-pencil sketches showing some simple features of the car on which the father had been enabled to secure information by repeated visits to the dealer from whom some details could be secured. Some points he could not obtain, and it required special letters to the factory, and two or three of such, to secure the desired results. The sum total of the buyer's experience was that he lost confidence in the firm from which he had bought his car. He labored under the assumption that if the company could not put out an instruction book, compiled specially for its buyers, he could not see how the car itself would be of the best and most consistent design. He figured that a company with inefficient selling representatives was certainly a very short-sighted one, because in nearly every vocation the salesman is at least expected to be the master of his commodity and to be able to talk intelligently on subjects relating to the car he is engaged in selling.

A BRIEF analysis of some of the most glaring inaccuracies of the instruction book revealed a deplorable lack of professional ability so far as expression through written words was concerned. In referring to the four segments or contacts of the commutator, they were consistently spoken of as "contracts," except in one case, and so it was little wonder that the buyer-pupil was lost in bewilderment when he was told in the instruction book to frequently clean and oil the contracts, until another visit to the dealer set him right. Such unpardonable inaccuracies breed distrust, and engender lack of confidence, which, if the car itself did not give gilt-edge satisfaction, would be enough to leave a trail of suspicion in the owner's mind, so that he would rarely speak good of the car, and would not be that ever-ready booster which every owner should be if the manufacturer hopes to get that assistance from his owners which he should attempt to secure if he intends to remain in the industry for any length of time.

DOUBTLESS many car manufacturers do not estimate the genuine value of catalogs and instruction books, particularly the latter, which are the encyclopedia of the owner for his particular car. Whatever is worth doing is worth doing well, and if an instruction book is for the car-buyer, it should be written so that it can be understood, and it should tell the story of the car, with those illustrations which are needed to thoroughly explain the text. There are many instruction books which are not worthy the name, which are of little value to the owner and are a very poor advertisement to the car maker. There is an art of writing instruction books, just as there is a science of car design; and it is as impossible to turn out a good logical instruction book without a knowledge of the laws of the mind as it is to build a motor without a knowledge of engineering principles. The car makers should realize this, and get out real instruction books. By making them instruction books in reality as well as name, they will be accomplishing much good. The motoring beginner generally is a seeker after information regarding his car and where should he get it but in the instruction book.

CHICAGO MEDALS FOR THE GLIDDEN DRIVERS

CHICAGO, May 2—Following up its offer of the Chicago trophy for the roadster division of the national tour, which was accepted by the contest board of the American Automobile Association, the Chicago Motor Club has decided on another innovation which will recognize the drivers instead of the cars. The directorate of the club last week, accepting the report of the Chicago trophy committee, decided to give a Chicago Motor Club gold medal to this year's winning driver in the Glidden division and also a similar token to the successful pilot in the Chicago trophy section. The club also has decided to take $300 out of its own treasury to pay for the Chicago trophy rather than to raise the money by popular subscription, as was first intended.

Announcement was made last week by Chairman Butler, of the A. A. A. contest board, that because of the unusual weather conditions which had delayed the Glidden pathfinder and prevented the distribution of road information to intending entrants at as early date as anticipated, he had decided to extend the date of receiving entries at the regular $200 fee from May 1 to May 15. The final entries will close June 1 and those who do not get their blanks filed by May 15 will have to pay $300 per car.

Chairman Butler also has decided on a change in the Glidden itinerary and has so notified Pathfinder Lewis. This change will bring Omaha onto the circuit. After leaving St. Joseph, Mo., the trial will run across the northwestern corner of Missouri into Nebraska and touch Omaha, after which it will run to Des Moines, Ia., which will add another day to the tour. After leaving Des Moines the tour will go to Cedar Rapids, Ia., and Moline, Ill., and finish in Chicago about June 30. Up to Friday of last week the contest board of the A. A. A. had in hand the entries of three Moline cars for the Chicago trophy, and since then three more nominations have been sent in—a Cole, Lexington and a Parry. The Glidden division shows eight entries to date—the two Premiers that were first in, the three Chalmers and since then two Maxwells and a Parry.

Plans have been made by the Chicago Motor Club for a big reception to the pathfinders when they reach this city. Two cars will meet the Chalmers at the Mississippi river and escort the scouts across the state of Illinois. At Wheaton, Ill., 30 miles out of Chicago, the welcoming party, which will be made up of about fifty cars, will assemble, and escort the scouts into the city. That evening the club will give a banquet at which it is expected Hugh Chalmers will speak on "Salesmanship," while Dai Lewis, E. L. Ferguson, L. J. Smits, Photographer Krone and Driver Gardham, the pathfinding party, will be guests of honor.

The Chicago Motor Club has been forced to postpone its economy run for the second time. The event was to have been run Thursday of this week, but rough roads have forced a postponement to May 19.

Motor Club Will Present Trophies to Winners of Each Division of the National Tour

SHRINERS HOLD TRACK MEET

San Francisco, Cal., April 27—While from the viewpoint of entries the motor car race meet held on Saturday and Sunday afternoon, April 23 and 24, was not a record-breaker, the limited field competing in the various events furnished keen excitement to the thousands that were attracted to the Ingleside track. The meet was held under the auspices of Islam Temple of the Mystic Shrine and the boosting of these Shriners brought thousands of enthusiasts to the contest and sealed its success. It was also the first time that A. A. A. officials were in control of a meet in this vicinity and the clock-like precision with which the different events were pulled off was most refreshing. Fred Wagner handled the flag, Samuel Stevens of New York was referee, while the timing was done by C. H. Warner.

Oldfield's attempts to lower the records for a circular dirt track were exciting. He made a mile in the Benz on Saturday afternoon in :52.12, ⅕ second faster than the old coast record. On Sunday afternoon he circled the course in :51.56.

In the 10-mile handicap on Sunday, after the Darracq, which had given the smaller cars a 3½ minute handicap, went through the fence on the third mile, and Oldfield in the Knox Giant, who started a minute ahead of the Darracq, quit to see if his riding partner had been injured, and the Oakland and the Maxwell were left to fight for winning honors. The Maxwell captured the prize, crossing the wire quite a bit in advance of the Oakland after a sensational brush for 9 miles.

The Buicks had an easy time taking the class events through the clever driving of Nikrent and Frank Murray. The Ford was conspicuous in all the handicaps and class events. Summaries:

SATURDAY, APRIL 23

Five-mile, for cars listing at $1,200 and under—Joe Nikrent, Buick, won; A. Ruddle, Ford, second; Frank O'Brien, Ford, third. Time, 6 :24.87.

Five-mile, for cars listing at $1,201 to $1,600—C. O. King, Maxwell, won; George Nelson, Oakland, second; T. F. Holmes, Maxwell, third. Time, 5 :35.52.

Five-mile, for cars listing $1,601 to $2.000—Frank Murray, Buick, won; Walter C. Morris, Autocar, second. Time 6 :06.60.

Five-mile free-for-all handicap—C. O. King, Maxwell, won; George Nelson, Oakland, second; T. F. Holmes, Maxwell, third; Walter C. Morris, Autocar, fourth; A. Ruddle, Ford, fifth; W. T. Warren, Matheson, sixth. Time, 5 :18.35.

Two-mile handicap match race—Barney Oldfield, Knox, won; time, 2 :15.68; Ben Kerscher, Darracq, second; time, 2 :22.56.

Ten-mile free-for-all handicap—Barney Oldfield, Knox, won; Walter C. Morris, Autocar, second; A. Ruddle, Ford, third. Time, 11 :08.02.

One-mile time trial for circular track record—Ben Kerscher, Darracq; time, :54.90. Barney Oldfield, Benz; time, :52.12.

SUNDAY, APRIL 24

Five-mile, class C, cars listing $1,200 and under—Nikrent, Buick, won; A. Ruddle, Ford, second. Time, 5 :56.85.

Five-mile handicap, class C, private owners, members of Shrine only—W. T. Warren, Matheson, won; Hansein, Palmer-Singer, second. Time, 6 :08.

Five-mile, class C, for cars listing $1,201 to $1,600—George Nelson, Oakland, won; King, Maxwell, second; A. Ruddle, Ford, third. Time, 5 :32.75.

Five-mile, class C, for cars listing $1,601 to $2,000—Frank Murray, Buick, won; Walter Morris, Autocar, second. Time, 5 :50.28.

Five-mile free-for-all handicap—King, Maxwell, won; George Nelson, Oakland, second; A. Ruddle, Ford, third; Autocar, fourth; Oldfield, Knox, scratch, fifth. Time, 4 :40.30.

One-mile trials—Oldfield, Benz; time, :51.56. Kerscher, Darracq; time, :53.56.

Ten-mile free-for-all handicap—King, Maxwell, won; Murray, Buick, second; Morris, Autocar, third. Time, 8 :19.93.

Four-mile match race, handicap—Kerscher, Darracq, scratch, won. Time, 3 :56.98.

Coming Motor Events

May 5-6-7—Speedway races at Atlanta, Ga.
May 9—Road race at Santa Rosa, Cal.
May 9-10-11—Reliability run of Motor Club of Harrisburg, Pa.
May 13-14—Track meet of Motor Contest Association, Brighton Beach, New York.
May 15—Track meet of Santa Rosa Automobile Association, Santa Rosa, Cal.
May 18-19—Reliability run of Norristown Automobile Club, Norristown, Pa.
May 19—Economy run of Chicago Motor Club to Lake Geneva and return.
May 19-20-21—Reliability run of Automobile Club of Hartford, Hartford, Conn.
May 22—Reliability run, Fort Worth Star-Telegram, Fort Worth, Tex.
May 29—Spanish voiturette road race for Catalunya cup.
May 27-28-30—Speedway meet at Indianapolis.
May 30—Track meet of Bay State Automobile Association, Boston.
May 28-30—Track meet of Automobile Club of Kansas City, Kansas City, Mo.
May 30—Hill-climb of Automobile Club of Bridgeport, Bridgeport, Conn.
May 30—Decoration day road race of Denver Motor Club, Denver, Colo.
May 29-30-31—Speedway meet at Los Angeles, Cal.
May 27-31—Reliability run of Washington Post, Washington, D. C.
June 1—Road races of Motor Contest Association, Riverside, L. I.
June 4—Track meet of Quaker City Motor Club, Philadelphia.
June 4—Annual hill-climb of Worcester Automobile Club, Worcester, Mass.
June 11—Annual Giant's Despair hill-climb, Wilkes-Barre, Pa.
June 11—Road races of Portland Automobile Club, Portland, Ore.
June 18—Hill-climb of Upper Westchester A. C., Ossining, N. Y.
June 15-29—Annual Glidden tour. Start Cincinnati, finish Chicago.
July 1-2-4—Speedway meet at Indianapolis.
July 1-10—Road carnival of licensed dealers at Los Angeles, Cal.
July 2—Reliability run of North Wildwood Automobile Club, Philadelphia.
July 2-3-4—Speedway meet at Los Angeles, Cal.
July 4—Track meet of Motor Club of Wildwood, N. J.
July 4—Track meet of Dallas Automobile Club, Dallas, Tex.
July 4—Track meet of Cheyenne Motor Club, Cheyenne, Wyo.
July 4—Hill-climb of Automobile Club of Auburn, Auburn, N. Y.
July 4—Track meet of Minnesota State Automobile Association, St. Paul.
July 11—Hill-climb of Plainfield Automobile Club, Plainfield, N. J.

Atlanta Ready for the Spring Meet

ATLANTA, Ga., May 4—Special telegram—The 3-day race meet which opens on the speedway here tomorrow does not give promise of being so big an event as the opening meet last fall, when practically all existing speedway records established at Indianapolis were shattered. Since that time, however, the 1-mile board track at Los Angeles has sprung into existence and holds many of the free-for-all records established last fall at Atlanta, so that the big thing with many who are here waiting for the program to open is that board track records may be beaten at this meet.

So far as entries go the meet which opens tomorrow is somewhat of a disappointment in that the field is not as big as it deserves to be. The program for the 3 days shows twenty events in all, seven of which will be run on Thursday and in those there is a total of twenty-three cars entered or little more than three cars to the race. One reason for this small entry list is the refusal of the management to give appearance money. Many drivers said they would bring their cars down if they were given from $1,000 to $1,500 appearance money and in addition have their hotel expenses paid as well as the express on their cars to and from Atlanta. This the management refused to do on the just grounds that it wants to encourage stock car contests and not special events among a few professional drivers who care for nothing else but the money they get.

In spite of this handicap the field is a representative one and includes such cars as Marmon, National, Fiat, Stearns, American, Cole, Pope-Hartford, Knox, Allen, Kingston, Buick, E-M-F, S. P. O., Red Torpedo and Firestone-Columbus. Although one or two makes represented last fall are not here, the number of each make is sufficiently broad to produce good contests.

The program includes two excellent events, both 200-mile races for special speedway trophies, both new cups and not contested for at the meet last fall. It was the intention to have the two big trophies put up in 1909 contested for this spring, but both the Buick and Rainier people claimed that they had a right to hold their trophies for 1 year and refused to allow them to be raced for at this meet. As a result two new ones have been made, each costing approximately $3,000 and being superior to those of last fall. Each will have to be won three times in succession. One known as the Atlanta speedway trophy will be raced for Thursday and the other—the Atlanta Automobile Association trophy—will be contested on Saturday. The Thursday race will bring out two Nationals, one Knox, one Marmon and one S. P. O. This is for cars 301 to 450 cubic inch piston displacement. The Saturday race is for 451 to 600 class and has a good entry list. It promises to produce a good contest.

Of the twenty-one events listed for the 3 days ten will be strict stock chassis events and the stock requirements of the cars will be gone into with the greatest care. It might be remembered here that at the Los Angeles board track meet not a single stock chassis event took place, so that not one of the stock chassis speedway records have been affected since the last Atlanta meet. In addition to the stock chassis meets there is a varied program consisting of time trials, pursuit races, amateur events and free-for-all events. The quota of drivers is representative of the season, including Harroun, de Palma, Aitkin, Strang, Rutherford and others of stellar qualities.

The speedway track is in good condition, upward of $8,000 having been spent in repairing it this spring. The first two curves leaving the grand stand have been widened 10 feet, this addition being on the inside so that ample room is provided for the biggest fields. Improvements have been made in the paddock and other parts of the course. The attendance promises to be good and the weather excellent. Grand opera with all the New York Metropolitan stars from Caruso down is holding out here this week and the entire south is on hand so that hotels are overflowing. It is expected that the attendance will exceed that of the opening meet last fall which was a record-breaker.

MAKERS WILL TALK TIRES

New York, May 3—A special meeting of the board of managers of the A. L. A. M. has been called for Wednesday, May 11, and according to the official announcement, one of the important things to be considered at the meeting will be the tire situation.

"This is extremely critical," says the letter sent out by the association, "and one that demands consideration at this time by the entire membership, as it affects every manufacturer as well as the present and future owners of motor cars. In this connection, it is requested that each board member before attending the meeting, will endeavor to investigate the rumors which are current to the effect that there exists among certain tire manufacturers of this country an understanding or gentlemen's agreement to increase the price of tires and to refuse to sell or deliver to manufacturers at this time any tires for 1911 equipment. It is hoped that you will obtain all the information available relative to the tire situation so as to be prepared for an open discussion at the meeting which promises to be one of the most important, from a makers' viewpoint, that the association has held."

The tire men shed some light on the subject and one of the prominent members of that branch of the trade said: "The present condition of the crude market is, we believe, manipulated and far above legitimate levels. We sympathize with the makers and appreciate their wish to contract for tires for their 1911 output, but our whole effort at this time is to avoid purchases of crude rubber while the market is in a cornered condition. If we contracted to sell tires right now, we would have to double the price asked last year because of the remarkable rise in the crude material. If we contracted to sell at the prices of last year, we would all go broke if we had to buy our crude under current conditions. Consequently we want to simply stand by for a while and wait for the bubble to burst. Reckoned on the price of crude rubber today, the price of tires would be practically prohibitive. We realize that fact and are quite as much interested in correcting conditions as the A. L. A. M. can be."

CLARKSON MAKES A CHANGE

New York, May 2—It is announced that Coker F. Clarkson will be chosen general manager and editor-in-chief of the Society of Automobile Engineers. Mr. Clarkson leaves the position of assistant general manager of the Association of Licensed Automobile Manufacturers. Among the main functions of the present and of the future of the society are the publication of a digest of current technical literature; a bureau of technical information; collection of data for a standard handbook of motor car design; exhaustive motor and metallurgical tests; an intelligent direction of the work of standardization of motor car materials, parts and accessories; a comprehensive card index of motor car engineering; the presentation and discussion of technical papers of the highest class. The S. A. E. has 350 members. Fifty new members have joined the society recently.

MICHIGAN AFTER SIGNBOARDS

Detroit, Mich., May 3—A systematic signboard campaign will be waged in Michigan this season by the Michigan State Automobile Association which mapped out the plans for the much-needed reform at its annual meeting, held in Detroit Monday. The meeting was attended by a full representation of the affiliated local organization, all of whom appeared to be enthusiastic in favor of the campaign. After a thorough discussion it was decided to do the first work on the highway connecting Detroit with the Indiana state line. This will be a measure of equal benefit to Detroit and Chicago motorists, as the Michigan system will connect with the one leading out of Chicago, thus providing an easy and unmistakable line of travel between the two cities over the route which has been found most practicable. Attention will then be given the best routes between Detroit and Grand Rapids, and Detroit and Saginaw. The sum of $25,000 was appropriated for

the purpose and the general sense of the meeting appeared to be that this or a larger sum should be expended each year until the main-traveled routes of the state shall have been marked out. The system employed will be the regular plan of signboard designations, adopted by the American Automobile Association, with which the Michigan organization is affiliated.

The following officers were elected at the meeting: President, E. A. Skae, Automobile Club of Detroit; vice-president, J. R. Jackson, Grand Rapids Automobile Club; treasurer, J. J. Ramsay, Automobile Club of Detroit; secretary, Dr. F. C. Warnshuis, Grand Rapids Automobile Club; directors, Edwin S. George, E. A. Skae, J. J. Ramsay and Joseph Stringham, Detroit; A. W. Brown, J. R. Jackson and Dr. J. C. Warnshuis, Grand Rapids.

BRUCE SECRETARY OF A. A. A.

New York, May 3—Special telegram—Robert Bruce today was elected secretary of the American Automobile Association, succeeding Frederick H. Elliott, who had held the position since January, 1907. Mr. Bruce has been editor of the Official Automobile Blue Book for several years and comes into office fully equipped to carry on the work of the national organization, particularly as it applies to touring. He has at his fingers' ends valuable information relating to the roads of the United States and it is expected that his election will be of great benefit particularly to the touring department of the A. A. A. Mr. Elliott becomes secretary of the Touring Club of America and a member of the board of directors of that organization which is located in New York.

BLACK CROW FINISHES TASK

St. Louis, Mo., May 2—The Black Crow sent out to make ten runs to DeSoto, Mo., and return, has finished its task, under the guidance of Driver Jagemann. The last few days of the test the weather was extremely disagreeable and the roads in bad condition. Jagemann says the odometer showed that the exact distance was 943 1-10 miles. The ten round trips were made in 60½ running hours. A drive to DeSoto and return was made each day for 10 successive days. In the entire time 83 gallons of gasoline was consumed, and 11¼ gallons of oil. The average distance made on each gallon of fuel was 11.36, while a gallon of oil lasted on an average of 109 miles. Not a repair was made, it is claimed. The car was sent out by the Phillips Automobile Co.

DEATH OF H. V. BECKER

Toledo, O., May 3—Harmon V. Becker, late president of the Elmore Automobile Co., of Clyde, O., died this morning of general debility. Mr. Becker was 84 years of age at the time of his death. Mr. Becker long had been a factor in the motor industry together with his two sons, James H. and Burton A. Becker.

Seek Truck Plant Site in Detroit

DETROIT, MICH., May 2—Representatives of the United States Motors now are in Detroit, looking for a site for the new motor truck factory. No deal has yet been closed, though options have been secured on two sites, one on the east and the other on the west side of the city. The one development in the negotiations between the United States Motors and the Brush company has been the announcement by President Frank Briscoe, of the Brush that the deal will not be in the nature of a cash sale. From this it is inferred that the Brush stockholders will be tendered United States Motors stock for their present holdings.

Another announcement of similar importance reached the local public, simultaneously with that of the United States Motors' new plans. This came from the Sibley Motor Car Co., which has been spending the past two seasons in development work, a large share of which preceded the formal organization of the company several months ago. The Sibley has purchased a factory located at Solvay and Mackie avenues, on the west side, and will start immediately installing machinery for the production of 2,500 20-horsepower pleasure cars. The facilities are considerable at the new location, the plant itself being 60 by 280 feet in size and the deal by which it was secured bringing with it 2 acres of ground, providing room for a large amount of expansion. The property adjoins the Wabash and Pere Marquette tracks and affords ideal shipping privileges. The present plans of the company contemplate the delivery of sample cars to agents by September 1 of the present year. Several agencies already have been placed and one order for 225 cars is said to be on the books of the firm from its Chicago representative. All the executive officers of the Sibley have been connected with the motor car industry with other firms, President C. P. Warner having been in the sales department of the Cadillac and other firms, while George B. Craven, who will be sales manager, has had connection with the Cadillac, Buick and Oakland. Ralph S. Moore is the vice-president of the company, and Eugene Sibley the secretary and treasurer.

About the largest building enterprise now in progress in Detroit is the main building of the Brush Runabout Co., which is nearing completion in the northern part of the city. This building is 900 feet in length, of one-story fireproof construction and will be occupied late this month. At present the Brush is occupying considerable of the room at the new factory which has been designed to permit a separate building for each department of manufacture.

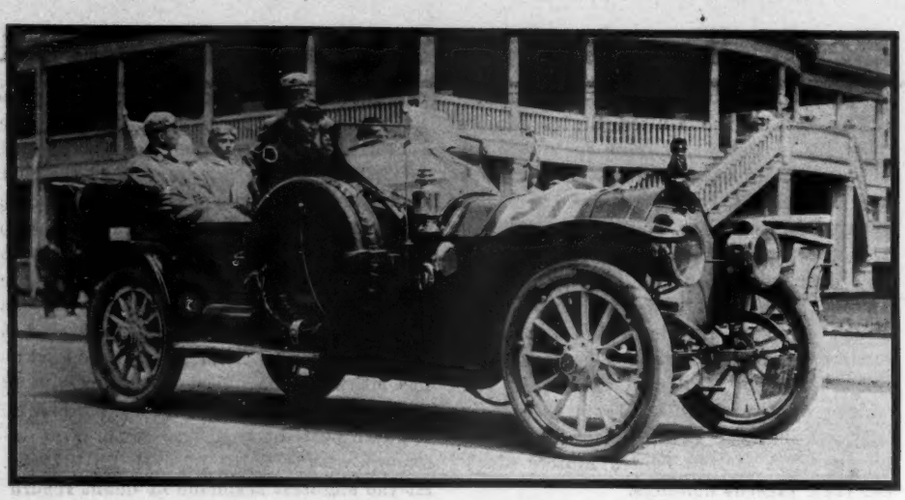
Among the new corporations announced during the past week is the Oliver Motor Car Co., which is capitalized at $300,000.

That production at the Detroit motor car factories has been proceeding up to date so very favorably that many of the factories have been up to the schedule set last winter, is due very largely to the fact that nearly all of the large factories have inaugurated a new office, the appointee to which has been making it his sole duty to do everything in his power to ensure the prompt delivery of parts from the various manufacturers with whom his firm has contracts. The official is known by various titles on the office directories, but is designated commonly as the parts chaser.

There have been several remarkable instances of the value of such an attache. At the slightest suspicion of doubt regarding the delivery of a shipment of parts, the chaser makes a trip to the factory and finds out exactly the situation. He then becomes, to all intents and purposes, a skilled assistant of the manager of the parts factory. If the manufacturer is held up for raw material, the chaser goes out and gets it for him, if he can. Frequently he has been able to give valuable advice regarding factory details which have impeded rapidity of production. Sometimes he has advised a shift of a sweeping order, and, as a rule, his advice is accepted by the parts manufacturer. Chasers invariably are men who have shown ability in the manufacturing department of the industry and the advent into the field of activity has been welcomed by all parties to the case. They perform most important work.

In general there are few local factories now producing 1910 models, which will not switch to the 1911 cars on or before September 1. In fact, it is generally believed that the Michigan state fair, which will be given in the third week of September, will see a very reasonably complete representation of the work of all the local manufacturers, as well as many from outside the state. The fair is making a material effort in this direction, is building a fine large building for the exhibits and has placed Walter Wilmot in charge of that department.

There have been no recent developments in the Selden patent cases, though the answers of the various independent manufacturers against whom suit has been commenced, are expected very shortly. The campaign for general publicity of the number of licenses issued the various factories, inaugurated by W. C. Durant, of the Buick, was continued by the publication on Sunday of the figures for the various members of the General Motors group of factories. The suggestion of Mr. Durant that all factory information of this sort be published regularly by the officers of the licensed association, does not meet with the approval of the Detroit manufacturers, generally considered, it being maintained locally that this is a matter with which the general public is not concerned and that secrecy should be maintained.



ALCO, DRIVEN BY BITNER, WINNER OF QUAKER CITY ROADABILITY

Many In Quaker Roadability Test

PHILADELPHIA, PA., May 2—More than 100 cars participated in last Saturday's third annual roadability run of the Quaker City Motor Club from this city to Atlantic City over a 68.2-mile course via May's Landing. Of these ninety-one were checked out at the start, the remainder being official and press cars. It was the most important motoring competitive event, in point of numbers at least, ever held in this country, and was marked by success in its every detail, even the weather, which had been of the early March brand during the early part of the week, being the best article at the disposal of the bureau.

W. C. Longstreth's Alco, No. 31, driven by Herbert Bitner, won the grand prize, the Mayor Stoy cup, covering the course in 3:36.05, just 4½ seconds faster than the official figures of 3:36:09½. This arbitrary standard—which, by the way, gave the scorers much practice in the computation of common fractions—was arrived at by taking the average of the official times selected by the mayors of Philadelphia and Atlantic City, the former choosing 3:33:00 and the latter 3:39:19.

Charles Swain's Winton, No. 1, driven by himself, took down the second prize, the massive Hotel Strand cup. Swain's time was just 13 1-10 seconds faster than the official figures. There was a tie for third prize between H. A. Rosenheim's Cadillac, No. 58, and A. E. Wright's Mitchell, No. 66, each being 39½ seconds faster than the official figures. Rosenheim guessed right when the coin was flipped, and took third place, Wright annexing the fourth place trophy. F. J. Fanning's Thomas Flyer, No. 77, driven by himself, captured the fifth place trophy, being just 50½ seconds slower than the mayor's standard.

Following the main prize winners came eighty-two others who participated in the winnings, Nos. 6 to 25 inclusive capturing class A prizes; Nos. 26 to 45 inclusive, class B prizes; Nos. 46 to 65 inclusive, class C prizes; Nos. 66 to 85 inclusive, class D prizes, and the remainder class E prizes—the winnings decreasing in value the father away the contestant's time from the official figures—from handsome clocks and thermidors to thermos bottles. Everybody won something.

In addition to the regular prize list there were three others, to go to the factory whose cars were most generously represented among the finishers. The Stearns won the over $3,500 prize with five cars; the Winton the $2,000 to $3,500 class with five cars; the Buick the less than $2,000 class with five cars.

Accidents were few and far between, only two of the starters failing to finish. Jackson, No. 3, broke its driveshaft 5 miles west of Hammonton, and Premier, No. 98, stripped its gears within sight of Egg Harbor. Neither finished. French's Klinekar, No. 53, hit the bridge rails at the crank-hanger turn over the railroad at Alco, and lost considerable time straightening its bent axle.

There were two electrics in the run—the Woods, No. 6, driven by George W. Daley, which reached the headquarters at the Hotel Strand but 3 minutes 50½ seconds slower than the official time, and the Detroit, No. 72, driven by R. L. Eberling, which was 19 minutes 30½ seconds slower than the standard.

A feature of the run was the number of owners at the wheels. Indeed, professional chauffeurs were a rara avis. It is this aspect of the affair which attracted most attention, and the enterprise of the Quaker City Motor Club in promoting an event in which 90 per cent of the owners participating drove their own cars furnishes an index of the tendency of the times.

"An arduous endurance run, with factory cars and factory men to drive, is not nearly as convincing as this affair today," said Mayor Stoy at the prize distribution on the steel pier Saturday evening. "Such a contest would have brought out a corporal's guard in comparison. The average man who has the motor car fever could not help being convinced that he must buy at once, had he participated in today's run. When he sees his business friends driving across our state and winning prizes he naturally argues that he can do the same. Aside from the manifest pleasurable features of today's run, it has an undoubted trade and advertising value."

Saturday night and Sunday the contesting cars were parked on the steel pier, and thousands of the elect who patronize the City-by-the-Sea at this season took advantage of the free impromptu show which was held there. This feature was under the auspices of the Automobile Trade Association of Philadelphia, and most of the cars were in charge of branch and agency salesmen assigned to the task of extolling the virtue of their wares to the big crowds.

A feature of the run which was not

ROADABILITY CONTESTANTS IN FRONT OF QUAKER CITY MOTOR CLUB

generally known, and therefore could not have been fully appreciated, is the fact that the Quaker City Motor Club profited not a cent from the affair. Every dollar of receipts, from whatever source, was spent for prizes and the usual expenses of promotion. The club committees devoted weeks of hard work to provide a pleasurable contest for members and their friends. As a missionary effort the affair cannot but result in a return from bread thus cast upon the waters.

Mayor Stoy's big reception committee drove out from Atlantic City and met the run at May's Landing.

The official car of the motor car commissioner of New Jersey, No. 13, a big White steamer, although a non-contestant, took a time-card at the start and finished less than a minute shy of the official time.

The Regal Plugger was among the cars to finish well up in the list. It is now on a 5,000-mile round-the-circle tour and left Detroit on April 11. It arrived in Philadelphia just in time to accompany the run. The Plugger already has something over 20,000 miles to its credit. R. W. Dean is managing its movements, with Lee Cuson at the wheel. Summary:

Car	Driver	Time Penalty
Alco	A. H. Bitner	0.00.04½
Winton	C. J. Swain	0.00.13 1/10
Mitchell	A. E. Wright	0.00.39½
Cadillac	H. A. Rosenheim	0.00.39½
Thomas Flyer	F. J. Fanning	0.00.50½
Elmore	G. R. Harvey	0.00.55½
Oldsmobile	E. R. Rusk	0.01.09½
Oldsmobile	E. K. Schultz	0.01.14½
Stearns	G. H. Gantert	0.01.23 9/10
White	Evans Church	0.01.39½
Halladay	A. Krouse	0.01.39½
Warren-Detroit	Tom Berger	0.01.50½
Elmore	F. Hardart, Jr.	0.01.51½
Stearns	F. C. Dunlap	0.02.09½
Mitchell	Thos. B. Smith	0.02.20½
Buick	E. H. Lewis	0.02.36 1/6
Buick	F. K. Worley	0.02.39½
Oldsmobile	A. E. Adams	0.03.09½
Oldsmobile	R. E. Ross	0.03.20½
Dragon	I. Jacobs	0.03.30½
Buick	Mrs. E. Wilkie	0.03.39½
Woods electric	Geo. W. Daley	0.03.50½
Winton	Geo. E. Potts	0.03.54 1/10
Chadwick	W. J. Coughlin	0.04.20½
Rustler	R. C. Russell	0.04.39½

REGAL PLUGGER WAS A CONTESTANT IN QUAKER CITY ROADABILITY

Cincinnati Sure of Its Speedway

CINCINNATI, O., May 2—The local speedway project now is well under way. An option has been secured on a tract of land lying between Licking river on the east and the Louisville and Nashville railroad on the west in the city of Covington, Ky., just across the river from Cincinnati where it is proposed to construct a speedway similar to those at Atlanta and Indianapolis. This tract is within 4 miles of Fountain square, Cincinnati, with a well-paved road from the Cincinnati suspension bridge all the way to the track. The electric cars make the trip in 30 minutes, the Louisville and Nashville railroad in 20 minutes, while launches on the Licking river may be taken to the track. The completion of the government's big dam at Fernbank will allow large steamboats to land there at the speedway. The track will be built of bithulithic paving material. Racing dates have been assigned for July 16. A grand stand seating 10,000 people will be erected at once, as well as a clubhouse. J. T. Earle, president of the National bank of Latonia, Ky., and Herb Harvey Meyers are at the head of the project.

CARS CHECKING IN AT ATLANTIC CITY AT STRAND HOTEL

ST. LOUIS SPEEDWAY PROSPECTS

St. Louis, Mo., April 30—President Wenneker, of the Million Population Club, has appointed a committee with himself as chairman to complete the plans begun recently by the club for the construction of a speedway for St. Louis. Mr. Wenneker issued a statement to the effect that the speedway is certain to be built, and that it will be one of the fastest in the country. Although the plans have been drafted, the club is not ready to make them public.

INDIANAPOLIS GETS COBE CUP

Chicago, April 30—Directors of the Chicago Automobile Club yesterday accepted the offer of the Indianapolis motor speedway management to send the Cobe cup to the Hoosier metropolis for competition this year. The Cobe cup will be the feature of the card on July 4 and in return the club will get a percentage of the gross receipts of that day.

C. T. JEFFERY RAMBLER HEAD

Kenosha, Wis., May 2—Charles T. Jeffery has assumed complete control of the manufacture and sale of the Rambler, manufactured by Thomas B. Jeffery & Co., according to official announcement just made. Mr. Jeffery was for 16 years a partner with his father in the big concern and is widely known in the trade. The business of the company will continue without change in policy. The will of Thomas B. Jeffery disposes of an estate valued at $2,000,000. His interest in the Rambler concern, with the exception of real estate, is divided equally between Charles T. Jeffery and the widow. The real estate is bequeathed to Harold W. Jeffery, the younger son, and Mrs. Thomas B. Jeffery.

Seiberling On Rubber Market

AKRON, O., May 2—The world is standing aghast watching the high flight of crude rubber prices, and wondering whether the limit has been reached. For 50 years the price of crude rubber averaged considerably less than $1 per pound; 2 years ago it stood at 65 cents per pound; and today it is above $3--a level that takes it out of many a field it has heretofore occupied.

Are the causes artificial or natural that have produced the present situation, and is the world to be deprived of the great boon of cheap rubber? These are the questions that the people are asking themselves and that led F. A. Seiberling, president of the Goodyear Tire and Rubber Co., on a tour of investigation through South America that took 2 months' time and more than 2,000 miles of travel in the fever-laden district of the Amazon river. Mr. Seiberling being—so far as known—the first American rubber manufacturer to take this perilous trip, his views, which follow, are of interest:

"The high prices prevailing for crude rubber are fairly attributable to two primary causes: First—the abnormal draft upon the world's supply in providing tires for motor cars; second, the wild speculation in rubber and rubber shares in England, which has taken on the aspect of a South Sea bubble in a mad scramble of people in all classes to get rich quick on rubber. London is the financial center of the world's rubber market, and the craze now running its course there is having a tremendous sentimental influence toward lifting prices. This will correct itself in the collapse which—in due time—is certain to come, and which will carry with it its trail of disaster and ruin to the rubber gamblers in the manner always attending the bursting of financial bubbles.

"Stories are being circulated to the effect that the rubber supply is being rapidly exhausted, and that the world is facing a famine; but a careful review of the situation justifies an opposite opinion.

"The past year more than 70,000 tons of crude rubber, having a value approximating $300,000,000, were produced, of which 40,000 tons came out of the Amazon river. This was wholly wild rubber gathered almost entirely from a belt extending along the Amazon and its tributaries and running less than 3 miles into the interior. The vast forest beyond these borders is substantially untouched; but with the building of the railroad around the falls of the Madeira—which will be completed in 1911—and with the building of roads through the forest connecting up rivers, the introduction of the motor car and the gasoline boat, vast districts heretofore inaccessible will be brought within reach of the rubber gatherer; and while the gain in production each year has been approximately but 10 per cent over the previous year, there is no question that this percentage will increase largely from this time forward.

"But a very important factor toward relieving the existing situation is found in the plantation rubber in the East Indies, which is now coming into the market in large quantities, each year's production being substantially double that of the preceding year. Whereas we had less than 4,000 tons in 1909, we shall receive approximately 8,000 tons in 1910 and well up to 16,000 tons in 1911, and within 5 years a quantity larger than is now furnished by the Amazon, which is a remarkable result considering the fact that 3 years ago the production of the entire East Indian district represented but a few hundred tons.

"Wild rubber trees in almost limitless quantities exist in Brazil awaiting the touch of human energy to yield up their latex, and the world will undoubtedly find means to obtain its required supply. The ruling classes in Brazil are an intelligent people, and though they have been slow to realize the advantage of planting rubber, they are now following the lead of the East Indians, and within a few years the Amazon valley will be furnishing plantation rubber far in excess of the wild rubber now coming down the river.

"As an indication of the immensity of its opportunities, one island in the mouth of the Amazon river, Isle Marajo, which is larger than the state of Maine, is capable of furnishing plantation rubber in quantity more than the entire world is now consuming. The government is enacting legislation to stimulate the planting of trees, and while we shall temporarily be subjected to high prices of crude rubber, since it is known that plantation rubber can be produced for 25 cents a pound, as certain as night follows the day we will within a few years have a large over-supply that will bring the cost lower than it has ever been heretofore, in my opinion.

"Users of rubber tires, on account of the present high prices, will have thought toward prolonging their life and increasing their mileage, which can readily be done by carrying proper pressure of air, and particularly with clincher tires, which, semi-deflated, will rim-cut and speedily disintegrate. Watching the adjustment of brakes will largely extend the life of the treads. Tread cuts that reach the fabric should be quickly repaired to prevent moisture reaching the cotton thread."

EXPORT TRADE INCREASING

Washington, D. C., April 30—The tremendous gains being made in the export trade in motor cars and parts thereof, is one of the striking features of the latest report of the bureau of statistics. It is shown that the exports of cars increased from 361 machines, valued at $548,640, in March, 1909, to 751 cars, valued at $806,184, in March last. During the 9 months' period ended March the exports of cars rose from 1,610, valued at $2,845,750, in 1909, to 4,180, valued at $5,372,458, in 1910. During these same periods the exports of parts rose in value from $67,681 to $201,203, during the month's period, and from $433,286 to $1,009,813, during the 9 months' period.

The detailed shipments of cars and parts during March last were as follows: United Kingdom, $133,679; France, $26,751; Germany, $4,336; Italy, $111,073; other European countries, $36,612; British North America, $524,209; Mexico, $40,189; West Indies and Bermuda, $57,171; South America, $26,476; British East Indies, $4,366; British Australasia, $14,793; other Asia and Oceania, $9,854; Africa, $15,845; other countries, $2,033. An interesting feature of the import statistics is the fact that the number of cars imported during March, 1909, and March last was the same—ninety-seven, while the value in the former year was $191,528, while in March last it was $191,099. During the 9 months' period the imports increased from 1,115 cars, valued at $2,044,970, in 1909, to 1,149 cars, valued at $2,231,696, in 1910, which is a most gratifying state of affairs.

Imports of parts rose from $55,965 to $110,137 during the month's period, and from $577,854 to $748,060, during the 9 months' period.

Foreign cars were received from the following countries during March last: United Kingdom, 4, valued at $11,446; France, 62, valued at $115,151; Germany, 12, valued at $34,445; Italy, 14, valued at $20,795; other countries, 5, valued at $9,262.

COUNT TAKEN IN OHIO

Cleveland, O., May 2—Investigation in northern Ohio shows that the corn and wheat belt of the west and the truck-raising farms of the east are not the only agricultural sections of the country enriching their owners to such an extent that they can purchase motor cars. A poll of twenty-two counties in this section of the state shows that 1,132 farmers own their own cars. Investigation shows further that 193 machines have been bought in this same territory by farmers since January 1. The figures are as accurate as it is possible to make them. The report on machines bought since January 1 follows:

In Hancock county the dealers refused to give names of owners because the farmers disliked to have it known that they can afford to buy motor cars. In Wayne county the indications are that more farmers than generally supposed have been buying machines. Dealers reported these sales but declined to give names: Twenty Reos, five Oldsmobiles, seven Buicks, five Maxwells, three Fords, nine Overlands, seven E-M-Fs, two Hupmobiles, two used cars, and twenty-five others, names unknown. In Medina county were found an Overland and a Brush car.

There are twenty prospective purchasers in this county. The report from Lorain county was, "None bought this year. Prices too high and roads too bad." From Lake county came the report, "None purchased this year with the exception of 'gentlemen farmers' from Cleveland." In Mahoning county were found six Fords and two Buicks. In Sandusky county were an E-M-F, an Overland, six Chalmers and a Navarre. In Ashland county were three Fords and an E-M-F. A McIntyre high-wheeler, two Overlands and seven Maxwells are owned in Warren county. In Seneca county a Queen, a Buick, three Lamberts, a Cameron, two Fords, two Brushes, and an Overland were reported. In Crawford county were three Overlands, an E-M-F, two Reos and five Fords. In Huron county were four Fords, two E-M-Fs and two Buicks "for pleasure and for work on the farm." In Portage county were two Reos, a White and an E-M-F. Following is the complete list of machines owned by the farmers in the northern part of Ohio:

Sandusky	100	Summit	25
Seneca	100	Stark	50
Hancock	37	Tuscarawas	25
Wyandot	50	Lake	4
Crawford	50	Geauga	7
Erie	22	Portage	12
Huron	100	Ashtabula	100
Richland	15	Trumbull	250
Lorain	None	Mahoning	20
Ashland	20	Columbiana	5
Medina	15		
Wayne	125	Total	1,132

NOW IT'S WASHINGTON

Washington, D. C., April 30—At a meeting of the dealers handling licensed cars in this city, held Friday in the rooms of the chamber of commerce, steps were taken toward the formation of a licensed dealers' association along the lines of similar organizations in other cities. There are twenty-seven dealers, handling forty-one different makes of licensed cars in Washington, and of this number thirteen, representing twenty-seven different makes of cars, were present at the meeting and voted to organize an association. J. M. Stoddard, of the Cook & Stoddard Co., was elected temporary chai man, and W. C. Long, of the Commercial Automobile & Supply Co., temporary secretary.

SEVEN WITH PERFECT SCORES

New York, May 4—Special telegram—Around a figure 8 course, the crossroads of which were at Trenton, N. J., the Delaware valley endurance run was successfully hold Tuesday. The entries, numbering twenty-four, were divided into three classes, as follows: Class A, cars valued at $2,001 and over; class B, from $1,001 to $2,000; class C, $1,000 and under. Classes A and B ran 300 miles, three times around the course, and class C traveled 200 miles. Four cars in class A finished with perfect scores—Speedwell, Locomobile, Sharp-Arrow and Crawford. In class B two Mercers were not penalized and in the other class a Maxwell had a perfect score. Twenty-one out of the twenty-four starters finished.

Mexico Factor in the Rubber World

TORREON, Mexico, April 28—The high price of rubber is stimulating the guayule rubber manufacturing industry in northern Mexico. Several new factories of large capacity are planned, and their erection soon will be started. The great rubber manufacturing plant of the Continental Rubber Co. at Torreon is running to its full capacity day and night. Practically all of the land upon which the wild guayule shrub grows is now owned or leased by the different rubber manufacturers, but active work of propagating the shrub from the seed upon the cut-over lands as well as upon heretofore unproductive tracts is in progress.

It is claimed that there is no question as to the permanency of the new industry, and that it will increase from year to year instead of diminishing as was feared for a time, immediately following the discovery that the shrub could be profitably utilized for manufacturing rubber. More than 20 per cent of the rubber output of the world now comes from the guayule shrub in northern Mexico and southwestern Texas, it is claimed. It loses its identity after it is put through the refining process, and goes on the market as Para rubber, being mixed with the rubber tree product for most purposes.

It is stated by G. C. Carothers, of Torreon, United States consular agent for this district, that the total value of the crude guayule rubber exported to the United States from Torreon and other points in his district during the months of January, February and March was $3,943,330, United States currency. It is estimated that the exportations of guayule rubber from other consular districts in northern Mexico to the United States during the same period was not less than $2,000,000 United States currency, and that the exports of the product to Europe were valued at more than $2,000,000 during the same period. This would make the total output of the crude guayule rubber for the 3 months about $8,000,000 gold.

The Continental Rubber Co., which is a subsidiary concern of the United States Rubber Co., is negotiating for the purchase of the rubber factories and the guayule shrub lands of Evaristo Madero and his sons. The Madero is one of the wealthiest families in Mexico. It owns more than 4,000,000 acres of land, situated in the heart of the guayule shrub territory, and has several factories in operation. Next to the Continental Rubber Co. it is the largest guayule rubber producer in Mexico. It is reported that the proposed consideration in the pending transaction is $15,000,000 gold. It will place the Continental Rubber Co. in control of the industry in this country if the deal is consummated.

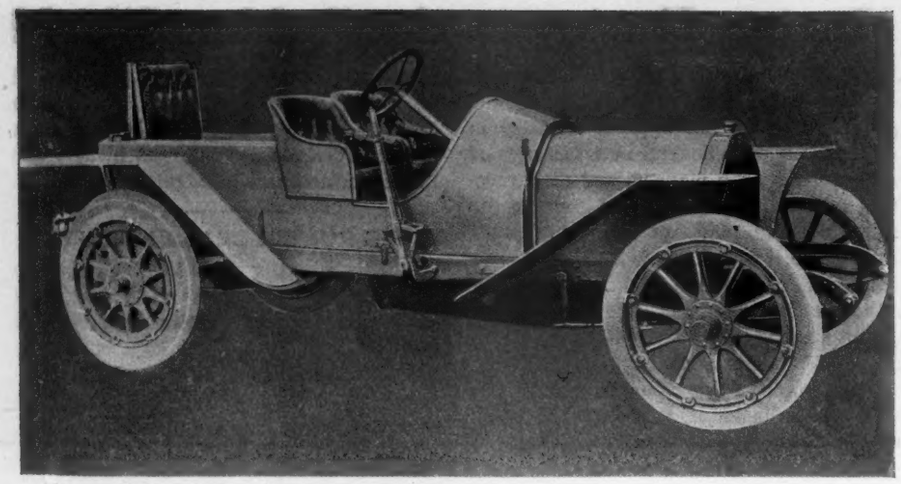
It is stated by manufacturers of guayule rubber that the product is used chiefly in the manufacture of motor car tires and for electrical purposes. The present high prices of the guayule shrub and the rubber product that is obtained therefrom are making fortunes for the land owners and the manufacturers in Mexico.

BIG RUBBER DEAL IN MEXICO

Saltillo, Mexico, April 30—The authoritative announcement is made here that Adolfo Marx and associates have sold their guayule rubber holdings in Mexico to a syndicate of Englishmen for $2,000,000 gold, and that the purchasers have just finished the organization of the Guayule Rubber Co., Ltd., to take over the property. The directors of the new company are Arthur Gordon Angier, William Bell Irving, Robert Kahn and Alfred Landauer, all of London, Eng., and William Young, of Saltillo. Mr. Marx is the pioneer guayule rubber manufacturer in Mexico. It is stated that the Guayule Rubber Co. will erect other large factories and will endeavor to increase the output of rubber to 5,000,000 pounds annually. The high price of the crude product has stimulated the guayule rubber industry to such a degree that fortunes are being rapidly made by the owners of land upon which the shrub grows. The price of the shrub has been advanced to $100 per ton in the Saltillo section. Inasmuch as some land gives a yield of 2 tons per acre it will be seen that extraordinary returns are obtained from the wild shrub which was a few years ago despised as worthless.

OHIO GOOD ROADS BILLS

Columbus, O., May 1—Several good roads bills were passed during the past week by the Ohio general assembly which are considered quite progressive by owners generally. The most important bill was presented by Senator Gotshall and provides for a different method of securing county aid in improving highways. Under the new law a majority of the real estate owners living within a distance of 1 mile from the highway can petition for a certain improvement and the county officials must make the preliminary surveys, indemnified by a bond sufficient to cover the preliminary expenses. A hearing then is held before the board of county commissioners, who have power to decide on the question of improving, straightening or widening the proposed road. After it has been decided upon the law provides for the division of the cost between the property owners and the county, on the basis of benefits derived. The law makes it easier to secure the improvement of any road in the state. A law fostered by Senator Cetone provides for the oiling of highways upon the petition of 30 per cent of the abutting property owners, the expense to be divided as follows; 85 per cent by the county and 15 per cent by the property owners.



UNIQUE BODY ON LANCIA ROADSTER

Italy Holds Its National Car Show

TURIN, April 14—America is represented in the seventh annual Italian shown by the Ford which upholds the stars and stripes, and its exhibit attracts deserved attention. This year's Turin show is more important and more attractive than its predecessors. The leading Italian cars are to be found in the neatly and uniformly decorated stands, the American idea, by the way, having met with much favor here. Among the cars most prominent are, of course, the Fiat, Itala, Isotta-Fraschini and Bianchi, which four makes are the oldest and certainly those which have made Italian cars known all over the world. Other well-known cars are the Lancia, Diatto, S. C. A. T., Rapids, S. P. A., Fides and Acquila. Mixed with the Italian cars are to be found leaders of the foreign countries. As usual, France has the lion's share with its de Dion, Peugeot, Berliet, Rolland-Pilain, Sizaire-Naudin, de la Buire and Zedel. Germany has its Mercedes and the Stoewer to take care of its interests, while the Austrian Daimler is also shown this year. There are scores of body makers displaying all kinds of beautifully finished carrousserie, in all shapes and colors. There are many torpedo-style bodies.

Mechanical Features of Show

From the mechanical and technical point of view it appears to the visitor that the 1910 Italian cars present no striking novel features. The most interesting fact is that most every manufacturer now is building a small car, a voiturette, to be more correct, whereas in former years a goodly number of makers who sold high-priced machines did not deem it necessary to add a small car. The second feature is the fact that several concerns which heretofore made only shaft-driven cars also have added chain-driven models to their output. These chain-driven cars are in most cases practically identical in general construction to the shaft-driven models. The en bloc motor is making headway, but only in the small cars. Practically all medium-powered and high-powered cars have their cylinders cast in pairs. The centrifugal pump system is popular and with few exceptions the cars have the multiple-disk clutch. More than three-fourths of the cars of Italian manufacture have high-tension ignition. Steam cars are not shown at all, but there are a few electrics which, however, do not seem to be in great demand.

There seems to be no concern which makes six-cylinder cars exclusively. The manufacturers of the San Giorgio until a year ago made only that type, but they have since added a four-cylinder. Some of the Italian concerns bring out a large variety of models. The Isotta-Fraschini concern certainly takes the lead in this respect. Exclusive of its industrial vehicle types it produces eighteen chassis of different sizes. The S. P. A. is made in twelve varied sizes, the Bianchi in nine.

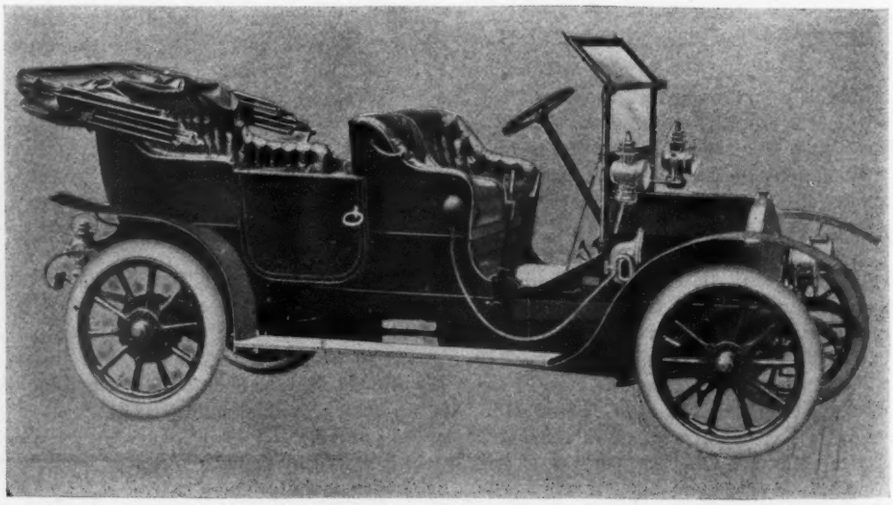
The lowest-price chassis is $1,160, which does not include the tires, while with tires $1,300 is the lowest quoted. The highest-priced four-cylinder chassis is $5,200, tires included. The highest-priced six is listed at $5,600. Taking for a basis the ten leading makes of four-cylinder cars and the forty-eight models shown—which includes chassis of various sizes but otherwise of similar construction—it appears that the average price of the Italian four-cylinder chassis is $2,750, while the average price of the six-cylinder chassis is $4,500.

Show Has 194 Exhibitors

There are 194 exhibitors in the show. A more appropriate city for the show could not have been found, for in and around Torino there are twenty to twenty-five plants where cars or car parts and accessories are made. The capital of these concerns amounts to from $5,000,000 to $6,000,000 and they employ close to 50,000 men, inclusive of the office forces. The Fiat, Itala, Lancia, S. C. A. T., Diatto, S. P. A., are the best known of the cars which are made in this city.

The Fabbrica di Automobili Lancia & Cie., was organized in November, 1906, by Vincenzo Lancia, the famous Italian driver. The concern made eighty chassis the first year and employed ninety men. This year 300 chassis is the scheduled output, the working force being 250 strong. The Fonderie Officine Frejus, capitalized at $230,000, makes the Diatto. Organized in 1905, the concern brought out 300 chassis during its first year, employing then 250 men. Now there is a force of 375 in the shops and close to 500 cars will be made. At any rate there are 350 chassis of the 12-15-horsepower model in construction now. The Societa Ceirano Automobili Torino, which was started in 1906, the capital stock being $140,000, derives its name from the Italian driver, Ceirano. The first year ninety chassis were made by the 100 men employed. This year 220 S. C. A. T. chassis will be constructed by the 210 shop men. The Societa Ligure e Piemontese Automobili, which makes the S. P. A., was organized in 1906. Its capital stock is $900,000. The first year sixty men were employed who turned out seventy chassis. Last year 450 men completed 250 chassis.

Probably one of the oldest concerns to make motor cars is the Societa Anonima



FIAT WITH ROOMY TOURING CAR BODY

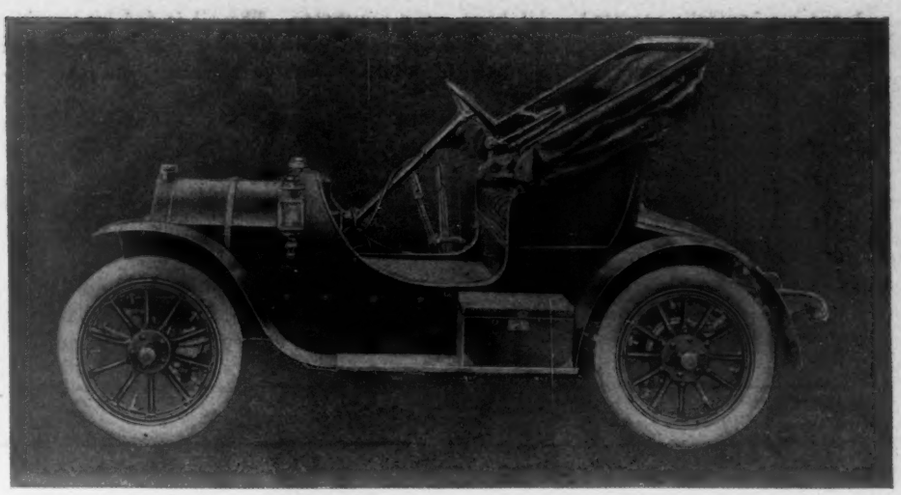
Fabbrica Automobili e Velocipedi Edoardo Bianchi, of Milan. Founded in 1885, the company's capital is $400,000. It claims to have made 450 chassis the first year, which is also the number it schedules for the present year. There are 800 men working in the shops. The Fabbrica Italiana di Automobli Torino, which makes the Fiat, was started in 1889, its capital being then $120,000, which has been increased in later years to $2,400,000. No other information is furnished except that about 3,500 men are employed. The Fabbrica di Automobili Itala, which was founded in 1904, has a capital of $600,000 and employs this year 780 men, while the Fabbrica Automobili Isotta Fraschini, of Milan, is capitalized at $800,000.

The old Milan concern which makes the Isotta-Fraschini probably exclusive of the commercial vehicle chassis, makes nearly a dozen different models. Some of them differ only in the transmission, or in the wheelbase. Three models are made with the motor's cylinders cast en bloc. The other cars have their cylinders cast in pairs. The 20-30 which has 4.3 inches bore and 5.1 inches stroke, is made both as a shaft and as a chain-driven car. This also applies to the 30-40 model. The 50-65 is chain-driven, as is the 100-horsepower car which, however, is claimed to have the same bore and stroke as the 50-65. All the I-F cars are water-cooled with a centrifugal pump, gear-driven. All have high-tension ignition system and a multiple-disk clutch.

Fiats Making Only Fours

Only four-cylinder cars are made this year by the Fiat. The five models made are the 12-15, the 15-25, the 25-35 and the 35-50, all of which are shaft-driven. The fifth model is the 35-50 which is chain-driven. The newest product is the 12-15 Fiat, which has a monobloc motor. The valves are located at the left of the cylinders and are operated by a single camshaft. They are of equal size and interchangeable. The pistons, which are fitted with four rings each, are made of cast iron, the piston rods are of drop forged steel, the bushings of bronze and lined with an anti-friction metal. The crankshaft is made of forged steel and carried upon three bronze bushings. The flywheel is made of cast steel, and serves also as a fan. The four cylinders, of cast iron, are cast en bloc, in one piece, which thus does away with the nuts ordinarily needed to hold these various parts together. The piping also has been simplified. A steel cover, easily removable, permits looking after the cooling chambers. The timing gears, located in the front part of the motor, are protected by an aluminum casing. The central gear which is set upon the motor crankshaft, as well as those operating the ignition and the pump, are made of steel, while the intermediate gears, including the left one which operates the camshaft—are made of fiber. The lower crankcase of the motor which is of aluminum, serves as a tank for the lubricant, and holds about 10.6 pints.

The carbureter is of the constant level type with two independent jets. The accelerator pedal is placed between the clutch and brake pedals, and upon the dash is a little handle which serves to fix the accelerator into a determined position at the time of starting. A high-tension ignition system is provided; the clutch is of the multiple-disk type. In the sliding gearset the shafts are carried in ball bearings. An integral portion of the aluminum gearcase extends under the clutch and flywheel, and forms a single piece with the motor crankcase. It is supported by a steel plate fixed upon the chassis. The rear axle construction is special. Instead of having cast iron parts there is a box of special form, patented, made of stamped steel plate in two sections. The long arm of the T forms a torsion tube containing the transmission axle. Ball bearings are used throughout. The frame is made of pressed steel, channel section.



PHAETON TYPE MADE BY ISOTTA-FRASCHINI

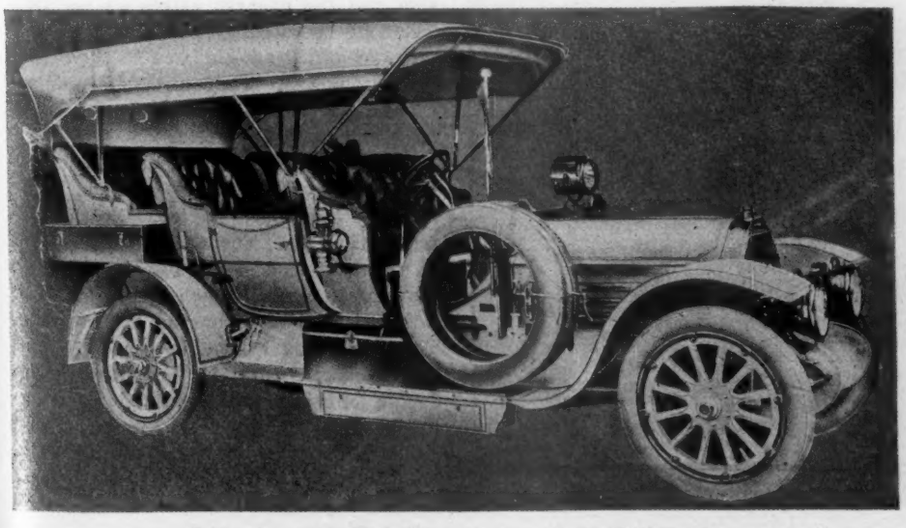
Features of the New Foreign Models

Fiat Lubrication Scheme

The hand brakes operate on the rear wheels and the foot brake upon the propellershaft. The lubrication is done automatically and is through a gear pump. This pump which is operated by the camshaft draws the lubricant from the motor crankcase and sends it under pressure to the crankshaft bearings and through ducts in the crankshaft to the piston rod bearings.

In addition to the pleasure cars the Fiat has a complete exhibit of commercial vehicles, from the light delivery car with its 12-15-horsepower chassis and made to carry about 1,200 pounds to the 3-ton truck and 25-35-horsepower omnibus carrying twenty to thirty-six passengers. The Fiat also makes a motor-driven fire engine.

The Diatto of 1910 were known formerly as the Diatto-Clement, as they only were French Clement cars, made in Italy. This season three models are placed on the market, two with shaft-drive and one with chain-drive. All have four-cylinders but those of the shaft-driven cars are monobloc while those of the chain style car are cast in pairs. There is no striking difference of construction in the three models. All the valves are located on the same side



ITALA CAR WITH BODY DESIGNED FOR QUEEN MARGHERITA

and are mechanically-operated. All have high-tension Bosch ignition. The carbureter is of the constant level type with the gas admission controlled by an accelerator pedal. The cooling is by water, with the circulation maintained by a centrifugal pump. The 16-20 has a cone clutch, while the other two models have a multiple-disk running in oil. The small car has three speeds and a reverse, while the others have four speeds and reverse. All have three brakes, two operating on the rear wheels and one upon the driveshaft. Ball bearings are used throughout.

Lancia As a Builder

The aim of Vincenzo Lancia, the builder and designer of the Lancia, always has been to bring out a light yet strong car well adapted for any kind of road work. The 1910 models are four in number, but differ very little from each other. All have a four-cylinder monobloc engine with the valves on the same side. A single camshaft operates inlet and exhaust valves. The crankshaft is cut from a special steel blank and carried on three large bearings. The crankshaft, magneto and pump gears are made of steel, while the camshaft gear and intermediate pump gear are made of fiber and armored steel. They are all enclosed and fed with oil. The water-cooling is done through a gear-driven centrifugal pump; the flywheel of the motor is vaned to take the place of the usual fan; cylinders and valve chambers are waterjacketed; and a honeycomb radiator is used on all cars. The four models are shaft-driven. A pressed steel torque rod takes the thrust of the drive and the drag of the brakes. It is bolted between the two halves of the rear axle casing at the one end and is fixed to a bracket bolted to one of the cross members of the chassis on the other end. The clutch is of the disk type and is oil-retaining.

The lubrication is of the force feed type and effected by a gear-pump driven from the rear end of the camshaft, taking filtered oil from the pump in the bottom of the crankcase. The oil is fed by varying pressure, according to the speed of the motor, to all the bearings of the crankshaft and through tubes or pipes up the connecting rods to the piston pins. The gear box is cast in one piece and fitted with four forward speeds and one reverse, the direct drive being on the fourth. It is of the sliding gear type with very short shafts.

The carbureter is a special Lancia gravity-fed provided with two jets, the smaller one operating up to 200 revolutions per minute and the two operating thereafter. The patented front axle is made of pressed steel of U section. The coupling rod of the two front wheels is protected by this system and is perfectly straight, which gives great rigidity. The steering gear is of the worm and sector type, the worm being mounted on two ball thrust bearings. The internal-expanding brakes operate on the rear wheels from the side lever while the contracting brakes operate on the shaft from the pedal. The chassis is of pressed steel, the front widely inswept to give the smallest possible turning radius, while the rear part of the chassis is curved upwards over the back axle to allow the frame being hung low. High-tension Bosh ignition is used on all models.

Only since last year are the manufacturers of the San Giorgio also building a four-cylinder. There is no radical difference in the construction of the only four-cylinder model from the three six-cylinder models. The cylinders of the four models are cast in pairs. The valves on the four-cylinder are operated by a single camshaft made of steel and in one piece. The cooling is by water, the circulation maintained by a centrifugal pump, gear-driven. The four-cylinder car has single high-tension ignition, while the sixes are furnished with double high-tension ignition, at extra cost. The lubrication of the motor is effected by a continual circulation of oil under pressure. The lubricant is gathered in the lower part of the motor crankcase from where it is taken by a pump operated by a gear. This pump sends the lubricant through a special filter, from which it passes into a distribution tube where the pressure is limited by a special valve which sends back into the crankcase the overflow or unnecessary oil. The oil is forced into the center of the crankshaft, from where it gets out through the various bushings after having lubricated them and drains back into the crankcase.

Upon the dash is a gauge which indicates the oil pressure in the motor and when it does not indicate a constant pressure it means that a supply of oil is needed in the crankcase. A funnel with a sifter is provided for replenishing, and a cock for indicating the quantity of oil necessary.

Output of the Bianchi

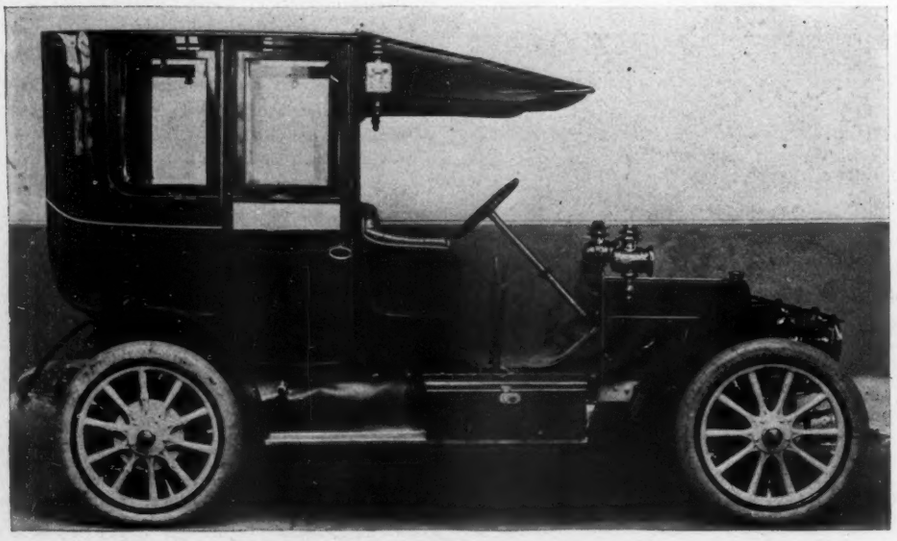
In former years the Bianchi concern made only chain-driven motor cars. This year it also is placing on the market shaft-driven cars which are practically identical to the chain-driven types except for the drive. The entire Bianchi production deals with four-cylinder cars, in which all have the cylinders cast in pairs excepting the 15-20 model, which has the en bloc engine, the valves being all on the same side and covered with a detachable cover or plate. The motor crankshaft has a double bottom, and has a capacity of 10.6 pints. The lubrication is of the pressure feed system. A gear pump presses the oil into a tube in the inside of the crankcase and distributes the lubricant wherever it is necessary. The metal disk clutch is enclosed in an oil-filled case and protected against dust and dirt. A shaft connects the clutch to the sliding gearset, whose parts are all set upon ball bearings.

While the small car has but three speeds —the third being the direct—all the other models have four speeds. All have a reverse in addition. Models 25-30 and 35-40 are made with both shaft and chain-drive. Model 70, which means the 70-horsepower car, is only made with chain-drive. The valves on these models are on opposite sides, the inlet valves being on the right side and the exhaust valves on the left. They are operated by two camshafts, the gears of which are enclosed in the aluminum crankcase. They always are lubricated and preserved from dust.

Has Double-Jet Carbureter

The 25-35 and 35-45 chain-driven models have a low-tension Bosch ignition, while all the other models have the Bosch high-tension system. The magneto is located on the inlet side of the motor, while the centrifugal pump which maintains the water circulation is on the exhaust side. The lubrication system in the 25-35 and 70-horsepower cars is the same. The double jet carbureter is of simple construction and has an automatic air inlet. The steering gear is practically irreversible, with helicoidal and of the worm and gear type.

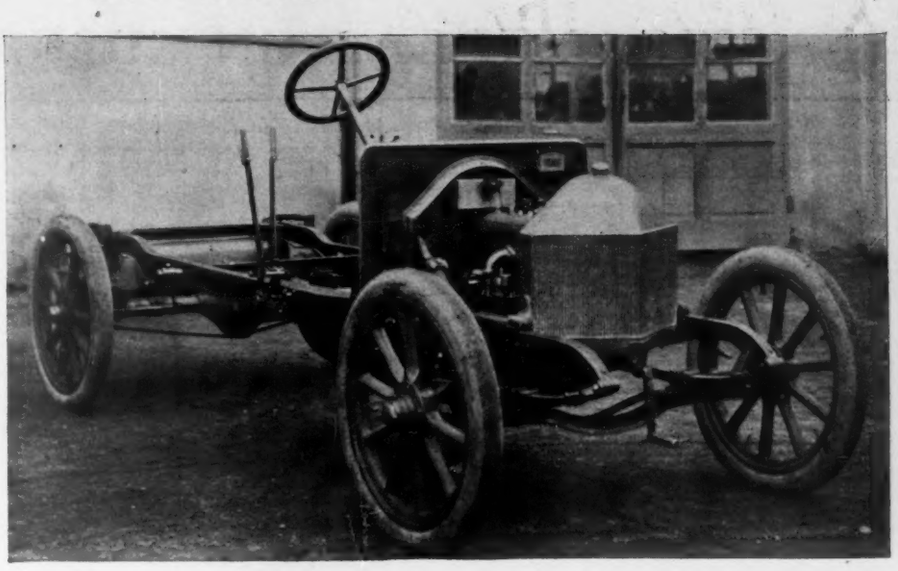
The Societa Ligure Piemontese Auto-



DIATTO IN LANDAULET FORM AND UNIQUE TOP

mobili, which makes the S. P. A., has placed on the market seven models, of which five have four-cylinder motors and two have six-cylinder motors. All the cars are shaft-driven. The 12-16 has its cylinders cast in pairs as has the 20-25 and the 35-50. The 35-50 has its four cylinders cast en bloc. On the 12, 15 and 25-horsepower cars the valves are located on one side, while on all the other models they are on opposite sides. These three models as well as the 20 are regularly fitted with high-tension ignition system, while the two sixes have low-tension, and the big four, the 35, is furnished either with high or low-tension. All the motors are water-cooled, have a centrifugal pump and a honeycomb radiator. All have a friction plate disk clutch.

Fours and sixes are being made this year by the builders of the Itala cars. There are five models of fours and two of sixes, but all are shaft-driven, and all have their cylinders cast in pairs, excepting the 12-16, which has its cylinders cast en bloc. The little car is known as the cab type, having been made specially to meet the requirements of a taxi. The valves are on opposite sides. The water circulation is by centrifugal pump, the radiator is of the honeycomb pattern.



DIATTO CHASSIS WITH ODD-SHAPED RADIATOR

CHARACTERISTIC FEATURES OF LEADING MAKES OF ITALIAN CARS DISPLAYED AT TURIN SHOW

ITALIAN FOUR-CYLINDER CARS

Car	Bore	Stroke	Manufacturers H. P.	A. L. A. M. H. P.	How Cast	Drive	Circulation	Ignition	Clutch	Wheelbase	Price of chassis in Italy
Bianchi	3 5	4 5	15-20	19⅜	Pairs	Shaft	C. pump	H. T.	M. disk	118	$1800
Bianchi	4 3	5 1	25-30	30⅝	Pairs	Shaft	C. pump	H. T.	M. disk	115½-123	2400
Bianchi	5 1	5 9	35-45	42	Pairs	Shaft	C. pump	H. T.	M. disk	123	3400
Bianchi	4 3	5 1	25-30	30⅝	Pairs	Chain	C. pump	L. T.	M. disk	115½-123	2400
Bianchi	5 1	5 9	35-45	42	Pairs	Chain	C. pump	L. T.	M. disk	115½-123	3400
Bianchi	5 1	5 9	70	42	Pairs	Chain	C. pump	H. T.	M. disk	127	4000
Diatto	3 1	4 3	12-15	15⅝	Enbloc	Shaft	C. pump	H. T.	M. disk	106	1160*
Diatto	3 5	4 7	16-20	19⅜	Enbloc	Shaft	C. pump	H. T.	M. disk	116½	1380*
Diatto	4 1	5 5	25-35	27¼	Separately	Chain	C. pump	H. T.	Cone	119	2000*
Fiat	3 1	3 9	12-15	15⅝	Enbloc	Shaft	C. pump	H. T.	M. disk	100-106	1600
Fiat	3 5	4 7	15-25	19⅜	Pairs	Shaft	C. pump	H. T.	M. disk	120	2000
Fiat	4 3	5 1	25-35	30⅝	Pairs	Shaft	C. pump	H. T.	M. disk	121½	2700
Fiat	5 1	5 5	35-50	42	Pairs	Shaft	C. pump	H. T.	M. disk	127	3400
Fiat	5 1	5 5	35-50	42	Pairs	Chain	C. pump	H. T.	M. disk	127	3400
Itala	2 95	4 3	12-16	14	Enbloc	Shaft	C. pump	H. T.	Fric. steel disk	.....	1800
Itala	3 5	4 3	16-20	19⅜	Pairs	Shaft	C. pump	H. T.	Fric. steel disk	113	2100
Itala	4 5	5 1	20-30	32⅜	Pairs	Shaft	C. pump	L. T.	Fric. steel disk	120-123	2700
Itala	5 1	5 5	35-45	42	Pairs	Shaft	C. pump	L. T.	Fric. steel disk	.....	3500
Itala	5 9	6 1	60	57⅝	Pairs	Shaft	C. pump	L. T.	Fric. steel disk	.....	5200
Isotta-Fraschini	2 5	3 9	10-12	10⅜	Enbloc	Shaft	C. pump	H. T.	Fric. steel disk	82	1300
Isotta-Fraschini	2 95	5 1	12-14	14	Enbloc	Shaft	C. pump	H. T.	Fric. steel disk	100	1600
Isotta-Fraschini	3 1	5 1	14-16	15⅝	Enbloc	Shaft	C. pump	H. T.	Fric. steel disk	106	1800
Isotta-Fraschini	3 5	4 7	15-20	19⅜	Pairs	Shaft	C. pump	H. T.	Fric. steel disk	118	2100
Isotta-Fraschini	4 3	5 1	20-30	30⅝	Pairs	Shaft	C. pump	H. T.	M. disk	120-126	2600-2700
Isotta-Fraschini	4 3	5 1	20-30	30⅝	Pairs	Chain	C. pump	H. T.	M. disk	120-126	2600-2700
Isotta-Fraschini	5 1	5 9	30-40	42	Pairs	Shaft	C. pump	H. T.	M. disk	123-129	3400-3500
Isotta-Fraschini	5 1	5 9	30-40	42	Pairs	Chain	C. pump	H. T.	M. disk	123-129	3400-3500
Isotta-Fraschini	5 9	6 3	50-65	55¼	Pairs	Chain	C. pump	H. T.	M. disk	126½-132½	4600-4700
Isotta-Fraschini	5 9	6 3	100	55¼	Pairs	Chain	C. pump	H. T.	M. disk	126½-132½	5200-5300
Isotta-Fraschini	3 9	5 1	20	24½	Pairs	Chain	C. pump	H. T.	M. disk	122	3000
Isotta-Fraschini	3 9	6 3	25	24½	Pairs	Chain	C. pump	H. T.	M. disk	122	3600-4000
Lancia	3 9	4 3	20-30	24½	Enbloc	Shaft	Thermo-Syphon	H. T.	M. disk	107½	2100
Lancia	3 9	4 3	20-30	24½	Enbloc	Shaft	Thermo-Syphon	H. T.	M. disk	115-126½	2100
San Giorgio	4 4	5	18-28	31	Pairs	Shaft	C. pump	H. T.	M. disk	118	2700
S. C. A. T.	3 3	4 7	15-20	18¼	Enbloc	Shaft	C. pump	H. T.	M. disk	113	1300*
S. C. A. T.	3 9	5 5	25-35	24½			C. pump	H. T.	M. disk	126	1600*
S. P. A.	3 3	3 9	12-16	18¼	Pairs	Shaft	C. pump	H. T.	Friction plate	110	1650
S. P. A.	3 3	4 7	15-20	18¼	Enbloc	Shaft	C. pump	H. T.	Friction plate	112½	2000
S. P. A.	3 7	4 7	20-25	24	Pairs	Shaft	C. pump	H. T.	Friction plate	115-123	2400
S. P. A.	3 9	5 5	25-30	24½	Enbloc	Shaft	C. pump	H. T.	Friction plate	122-126	2800
S. P. A.	5 1	5 7	35-50	42	Pairs	Shaft	C. pump	H. T. or L. T.	Friction plate	122-130	3400

ITALIAN SIX-CYLINDER CARS

Car	Bore	Stroke	Manufacturers H. P.	A. L. A. M. H. P.	How Cast	Drive	Circulation	Ignition	Clutch	Wheelbase	Price
Itala	5 1	5 5	60	63	Pairs	Shaft	C. pump	L. T.	M. disk	.....	5200
Itala	5 5	5 5	75	72⅝	Pairs	Shaft	C. pump	L. T.	M. disk	.....	5600
San Giorgio	3 9	3 9	30-40	37	Pairs	Shaft	C. pump	H. T. or special	M. disk	128	3700
San Giorgio	3 9	5 ..	40-50	37	Pairs	Shaft	C. pump	H. T.	M. disk	133	4000
San Giorgio	4 4	5 ..	50-60	46½	Pairs	Shaft	C. pump	H. T.	M. disk	133	4800
S. P. A.	3 7	4 7	30-40	36	Pairs	Shaft	C. pump	L. T.	Friction plate	127-135	3400
S. P. A.	5 1	5 7	60-70	63	Pairs	Shaft	C. pump	L. T.	Friction plate	135½-143	4800

* Without tires

PRACTICAL IDEAS ON SUBURBAN GARAGES

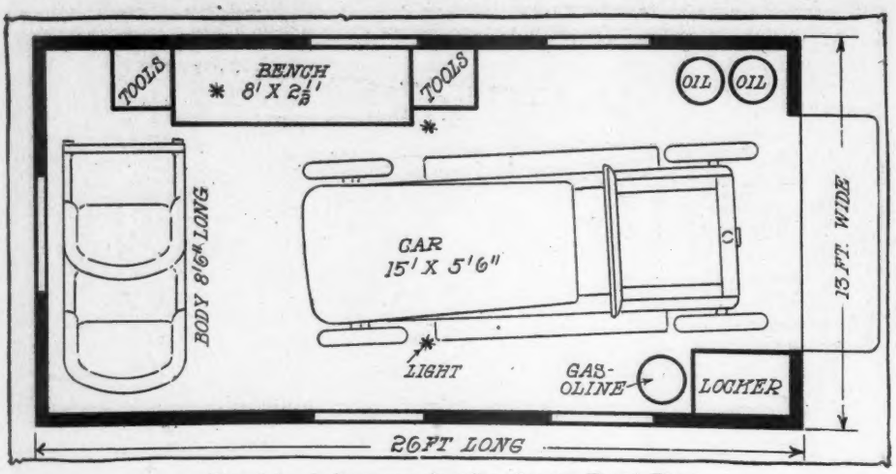


FIG. 1-A—A SUITABLE ONE-CAR GARAGE FLOOR PLAN

By Herbert L. Towle

THE logical and frequently the necessary place for the suburban motorist to keep his car is in a private garage on his own premises. The majority of owners drive their own cars, and unless the machine is at one's back door it cannot truthfully be said to be available at a moment's notice. Unless it is so available it certainly will not be used for short runs, and frequently not for long ones. When the car is kept on the premises it costs nothing but what it actually consumes, aside, of course, from the interest and depreciation on the garage and its equipment. It is likely to be better cared for, and also is safer. On the two items of insurance and immunity from pilfering the private garage, if fireproof or nearly so, more than pays for itself.

In determining on the garage the points to be settled in their order are as follows: Size and location, equipment, arrangement, construction and cost, heating and lighting.

Many Garages Too Small

Many owners make their garages too small to accommodate anything but the car itself. If any work is required on the machine it must be taken out of doors, and the running board used for a bench. Other garages are needlessly large. Some garages are unbearably hot in summer, freeze up with the first cold wave, and are nearly impossible to heat. Unless a garage can be warmed in cold weather it is useless to think of doing consecutive work in it during the winter months, and the annual winter overhauling must be done in the spring, or the car taken to a shop to be gone over.

To settle the garage question aright, the first thing needed is to understand exactly what is wanted—for example, what floor area is required to house the car itself, and what is required for the various extras.

Car Is the Criterion

Let us first consider the car itself. A car of standard gauge averages 5½ feet in width over the body and fenders. Its length is the wheelbase plus from 3½ to 5½ feet. For wheelbases up to 8 feet add 4 feet, and for longer wheelbases 5 feet, or 5½ feet in extreme cases. A 120-inch wheelbase car will measure about 15 feet over all with the cape cart hood folded back, and with the headlights on. In allotting space, about 4 feet must be added to the length for working room around the car, and 2 feet each side. Thus the floor area for the 15-foot car above mentioned becomes about 170 square feet. If the garage is intended to house nothing but the car and a few oil cans, spare shoes, etc., it can be 12 by 18 feet outside dimensions. If the car is small, the 12 by 18 garage will house also a small work bench and clothes locker. Practically a garage is simply useless unless it contains these items of equipment, and others may well be added, such as a foot or motor-driven emery wheel, and a small foot or motor-driven lathe and a sensitive drill press.

Before entering minutely into the question of floor space, the question of equipment must be settled. On analysis this is found to turn in vital measure on the ques-

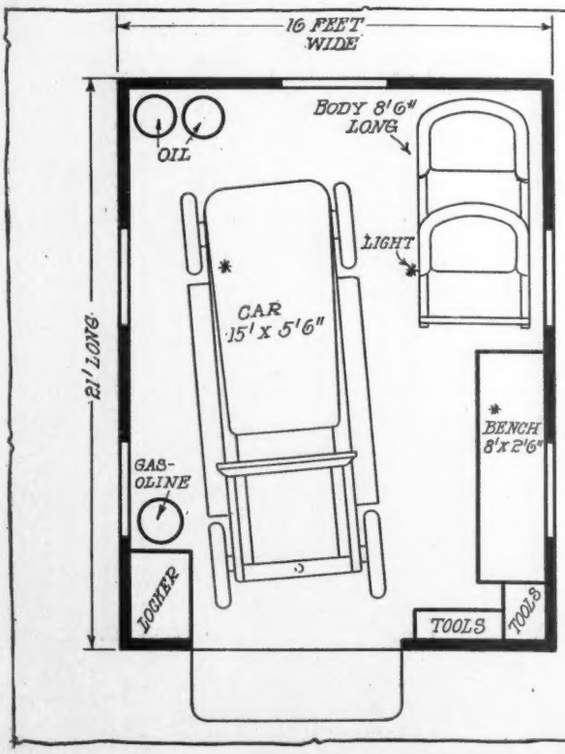


FIG. 1-B—ONE-CAR GARAGE FLOOR PLAN

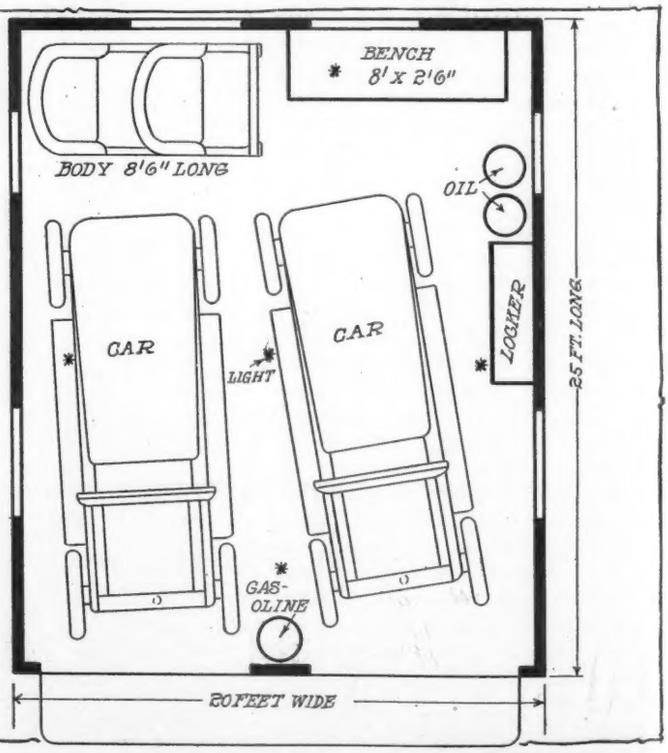


FIG. 2—A TWO-CAR GARAGE FLOOR PLAN

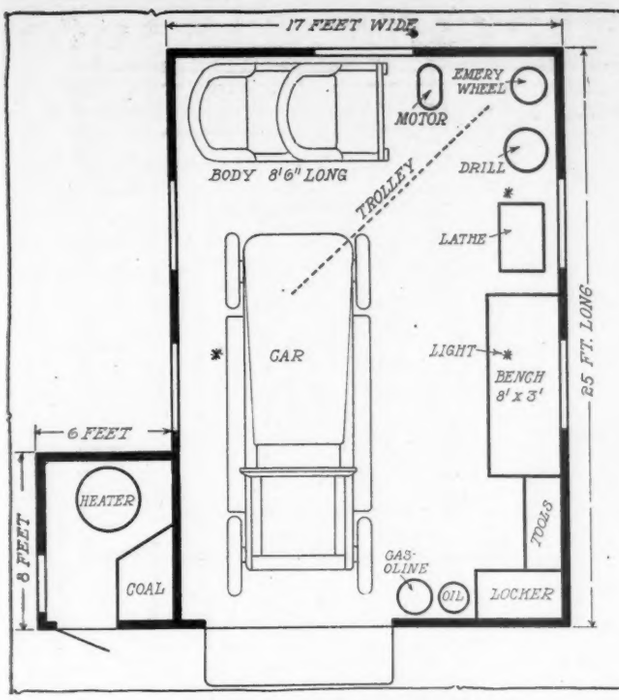


FIG. 3—A SIMPLE ONE-CAR GARAGE

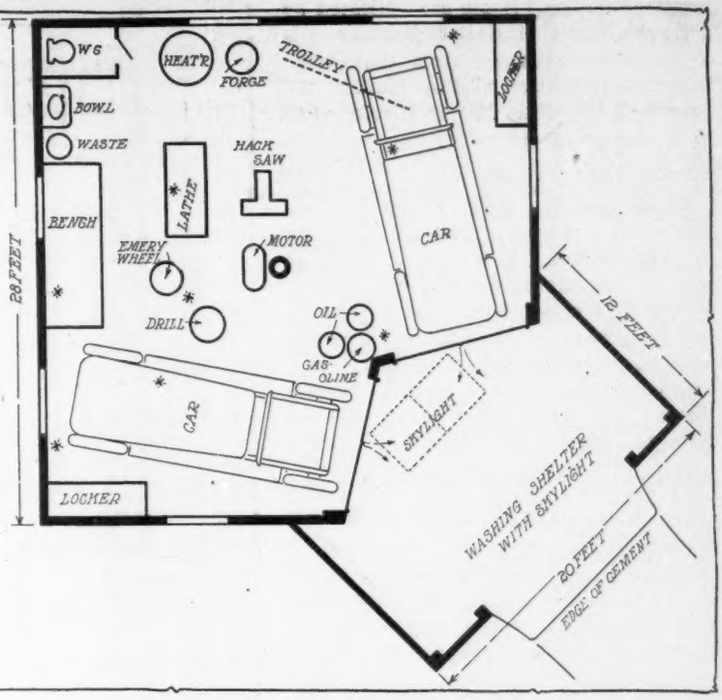


FIG. 4—TWO-CAR GARAGE WITH CORNER ENTRANCE

tion of heat. No one can work properly in a cold shop. If the winter overhauling is to be done on the premises, either the garage must be properly warmed or the motor, transmission, etc., on which work is to be done must be dismounted from the car and carried to a warm and light workroom in the house. This involves some duplication of tool equipment, and some inconveniences and loss of time in carrying things back and forth. Further, the unavoidable dismantling, prior to the real work of overhauling, must be done without heat. Of course, if one chooses, the difficulty may be circumvented by getting rid of all the gasoline in and around the car and using a stove for heat while the dismantling is in progress: but the temptation to use the stove before the car is put out of commission is apt to be strong.

Weather a Big Factor

Broadly speaking, in any latitude where the winter is cold enough to lead to the car being laid up for overhauling, the equipment of the garage will depend on whether or not it is to be heated, and of course the floor space will be determined likewise. The unheated garage need afford room only for the car itself, for the body removed from the car—this is both desirable and frequently neglected—for a bench, set of shelves and clothing locker, and for oil cans and similar articles. The heated garage, on the other hand, may contain in addition to the above, tools of any sort from a foot-power emery wheel up to the equipment of a miniature machine shop. It may contain chauffeur's quarters in a wing or second story. It may be built in one with a stable, and it may have separate paint and repair shops.

To simplify the subject, let us direct attention first to the unheated garage. This type usually will contain one car, and more often a small than a large car. Rarely, if ever, will it house more than two machines. The minimum requirements of such a garage are about as follows: A bench 8 by 2½ feet, car and working space 10 by 18 feet, storage space about 40 square feet; total, 240 square feet, equal to 12 by 20 feet inside. This is the smallest space in which one can comfortably work, though not the smallest physically possible. It gives no room for staging the body when the car is to be stripped. For that purpose 5 feet must be added to the length of the garage, or 3 feet to the width, making the dimensions 12 by 25 or 15 by 20 feet. Floor plans of the latter two arrangements are given in Fig. 1, A and B. The spaces indicated in these sketches will allow a slight margin for the additional equipment which is sure to come in time. The garage will not in reality be as crowded as the drawings show, since the stripped chassis is smaller than the complete car.

As regards washing, it should be possible to do this indoors if necessary, though it is more convenient and satisfactory to do it outside when the weather permits. If one has a cinder drive the water will soak in rapidly enough to give no inconvenience. If the garage is not too far from the house, the garden hose may be used for washing instead of running a pipe to the garage. This avoids the possibility of freezing in winter, and saves the tax on the additional faucet.

A garage for two cars needs to be about half again as large as for one car, since the same bench, tool and storage facilities will do for both. The same applies to the room allowed for taking off the body. If 300 square feet is ample for one car, 450 square feet will suffice for two. Fig. 2 illustrates this style of garage.

Leaving the subject of construction for later consideration, turn to the heated garage. Here the scope for variety of design is much greater. In addition to the storage and bench, at least 200 square feet should be allowed for the heater and forge, lathe, emery wheel, light drill press, power hack saw, and the motor to run them, also for washbowl and toilet. For each additional car from 130 to 160 square feet should be added. It is not absolutely necessory to allow 2 feet of working room around each individual car in the garage, as the same 2-foot strip will serve for two adjacent cars. If, however, the cars are to be washed indoors, at least 3 feet is needed. For two-passenger runabouts, of course, less space is required, especially in length.

Simple One-Car Garage

A simple one-car garage plan is shown in Fig. 3. It is practically the left-hand plan of Fig. 1 with space for tools added by augmenting the width 4 feet. The equipment comprises a bench 8 by 3 feet, a lathe, drill press and emery wheel, with a motor to run them. The motor may be bolted to the wall up out of the way instead of being located on the floor. A 1-horsepower motor would be ample for the equipment shown. A tool cupboard and locker are added, also an oil tank and a gasoline pump communicating with a submerged outside tank. These latter features are shared in common by all the garage plans shown.

A very handy feature where overhauling is to be done is an overhead trolley, such as is used in butcher shops, together with a rope or chain hoist for lifting the motor or transmission out of the car. The trolley is best incorporated into the original construction, but it is possible to add it afterward. In all the plans the most suitable

locations for drop lights are indicated by asterisks. This particular plan shows a heater room separated from the garage proper by a common wall to eliminate the danger of fire. This feature is referred to in a later paragraph.

Garages For Four Cars

Garages housing three or more cars are frequently arranged so that all cars enter by a single door. This type of garage is easy to keep warm, but the maneuvering of the cars into position inside presents serious inconveniences, and such a garage must have considerable waste room. This waste room is avoided by housing the cars side by side, each with its own separate entrance as in Fig. 5. This type of garage is popular in England, where the temperatures are not extreme. It is well suited to the Pacific slope and to the middle and southern states. It is very economical of inside room, and the tools, heater, toilet, etc., may be distributed along the back wall or grouped at one end as preferred. It presents one disadvantage, namely, of giving a poor light for working on those portions of the car back of the dashboard, owing to each car standing in its neighbor's light. By using skylights this drawback can be in large measure avoided.

A second drawback of the individual door type of garage is the considerable area of court room required by the cars for turning around after backing out, if the garage faces the street. The court indeed must be larger than the garage itself, and although this is not noticeable in a large country place, it cuts into the lawn considerably if the latter is already small. If the arrangement permits the garage to open directly on the street, of course this feature is absent. By letting the side of the garage face the street and laying out the drive as indicated in Fig. 4, the court area is slightly reduced.

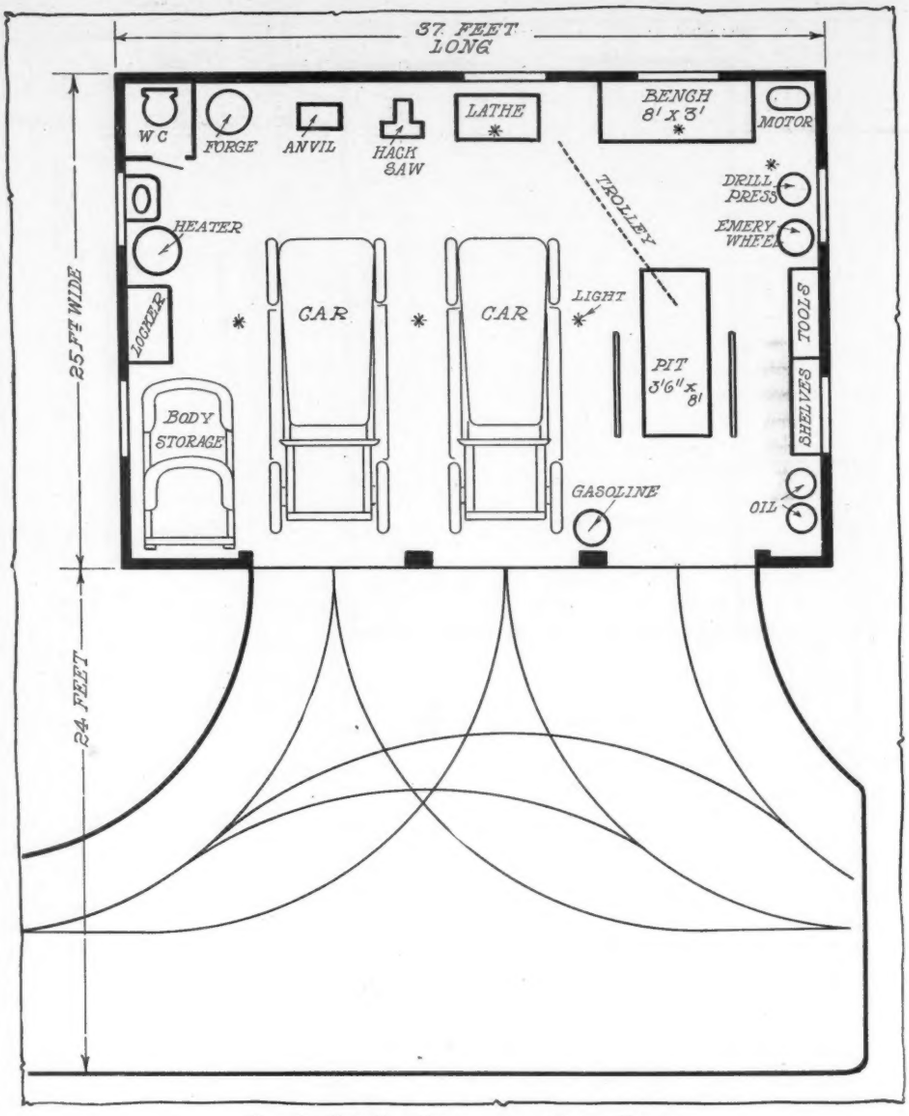


FIG. 5—TWO-CAR GARAGE WITH THREE DOORS

Two-Car Garage Schemes

To avoid the unsightly court space in front of the garage, and also to give each car ample light from both sides, the author suggests the two-car garage arrangement shown in Figs. 4 and 7. A corner of the garage is cut out and two pairs of swinging doors are provided, through each of which a car enters and swings into position close to the adjacent wall, being then lighted on the other side from the opposite wall across the intervening shop space. Outside the doors a shelter is erected having side walls, a roof, a large permanent opening and a skylight. In this shelter, which by the way should have a drained concrete floor, the cars may be washed in any but the severest winter weather. When necessary they can be washed inside. When planned for two cars this arrangement gives just about the necessary space for bench, heater, tools, etc., together with space to stage one body during overhauling. As illustrated, the garage is 28 feet square outside, though 30 feet would be better; and the shelter is 20 feet wide. The design lends itself readily to artistic treatment, and the usual court space is eliminated altogether. The skylight prevents the side of the car next the door from being too dark for easy cleaning.

Regarding two much-praised items of equipment, the pit and the turntable, the present writer is disposed to regard both of them as somewhat overrated. Most of the work on present cars is done from above, and when one must work beneath there are portable trundles to be had at low cost which enable the worker to lie on his back without soiling his clothing. Unless the pit is made perfectly watertight, it is sometimes hard to keep dry; and if it floods, the nuisance of bailing or pumping it out amounts to more trouble than the pit itself saves. If a pit is provided, it should be located to give the car a straight run from the door to the pit, and concrete guard rails 4 or 5 inches high and wide should be placed about 66 inches apart along the sides to prevent possibility of the wheels running into the pit. The pit itself should be about 3½ feet wide and 6 to 10 feet in length, according to convenience. It may be 4½ to 5 feet deep, and should have a flight of steps at one end enabling the worker to stand or sit at choice. The walls and floor should be heavily concrete lined, else the pit will be always damp. The edges of the pit should be recessed to allow planking to be let in to cover the pit when it is not in use.

The Aerial Repair Pit

An ingenious owner, who wanted room to work under his car, but could not provide a pit, has solved the problem by providing a pair of inclined trestles up which the car should be run to a level section of trestles elevated some 3 feet above the floor. This presents the obvious drawback of requiring a platform at each side of the car if simultaneous work is to be carried on from above. Contrasted with this, we find the problem of a pit extremely simple when the garage is built on a hillside with the back of the garage supported on timbers. One needs only to plank in the timbers forming the foundation and construct a wooden box beneath the floor to form the pit.

The turntable is sometimes described as an economizer of space. Sometimes it is; quite as often it is not. It is impossible

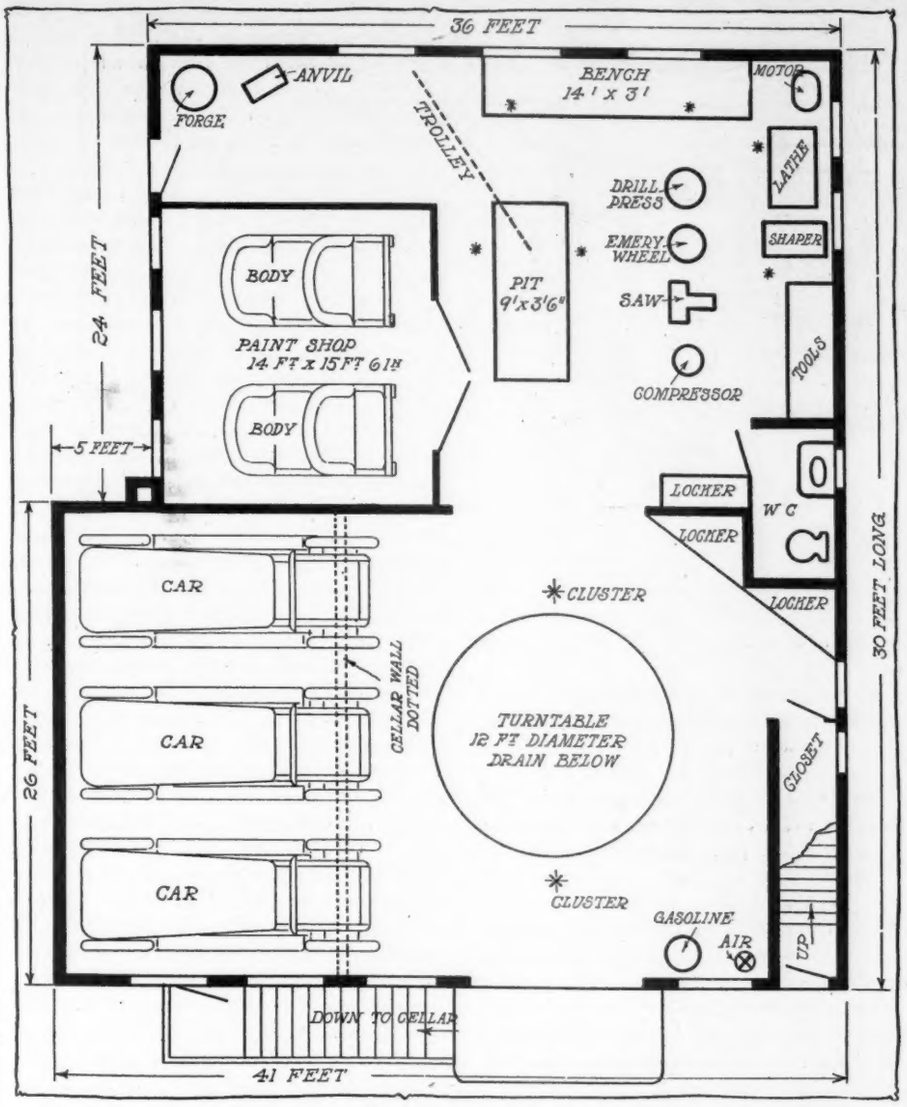


FIG. 6—PALATIAL HIGH-PRICED GARAGE FOR THREE CARS

to put a turntable in a small garage for the reason that the garage must be wide enough to rotate the car bodily, and unfortunately this extra width on and about the turntable cannot be otherwise utilized. The turntable permits the car to be readily washed under cover, and headed for the street instead of backing. It thus saves court space in case the drive is too crooked or narrow to permit backing out. Under these conditions it is desirable, but seldom otherwise. Of course, a drain beneath the turntable is assumed.

Large and Costly Garages

Fig. 6 gives the plan of a large and elaborately-equipped garage housing three or four cars, with complete shop facilities. This is such a garage as would be appropriate to a large suburban estate whose owner wished to be independent of local shop facilities. The turntable, 12 feet in diameter, is so placed that each of three cars can be run to its position with the minimum of maneuvering and waste room. Washing is done on the turntable, beneath which is a drain, and the cement floor of the storage room drains toward the turntable. Beyond the storage room is the machine shop, which is equipped with pit, work bench, lathe, shaper, drill press, emery wheel, power hack saw, air compressor, anvil and forge. A straight run from the turntable brings the car over the pit, and the trolley permits the motor or transmission to be lifted out and placed where it will not be in the way of other work. The paint shop is large enough to accommodate two bodies, or at a pinch a body and chassis, though it would be possible to paint the chassis in the storage room since it requires but few coats to make it presentable.

The chauffeur's quarters are in the second story and are reached by an outside door. They are wholly separate from the first story. The heater is in the basement underneath the front left-hand portion of the garage. The basement, like the chauffeur's quarters, is reached by an outside door and is completely cut off from the interior of the garage. Steam or hot water heat is contemplated.

On the subject of construction the writer's experience has given him some rather positive opinions. Frame construction, particularly single-wall construction, he condemns utterly, unless the state of the owner's pocketbook is such as to make the choice frame construction or none at all. The reasons for this are two-fold. In the first place the frame garage is not fireproof; in the second, it is not warm in winter or cool in summer. Any one who has climbed into an unventilated attic on a hot summer day will realize how much heat may be stored up by absorption from the direct rays of the sun, with no other shelter than shingles or single-wood planking. In a hot garage, the gasoline in the car cannot help evaporating rather rapidly. By the same token, the single-wall frame garage freezes up almost immediately when a cold snap comes. Its owners must perforce adopt a non-freezing mixture before cold weather sets in, else he may be caught unawares by a drop of 20 degrees over night, and the nervous wear and tear of such a possibility more than offset the small saving in first cost.

If the single-wall garage is hard to keep from freezing, it is likewise hard to heat, and one may burn tons of coal in such a barn-like structure in the futile endeavor to warm all outdoors when the car has to be overhauled.

Steel Garage Not Advisable

What has been said of the frame garage applies with even greater force to the sectional steel garage, since metal is a far better conductor of heat than wood. Single-wall frame and steel garages have a legitimate place for temporary summer use and in summer latitudes, but their limitations should be clearly understood.

The suitable materials for all-the-year-around garages are stone, brick, reënforced concrete, hollow tile, cement blocks and stucco. The relative cost of these materials will depend on the locality, but in the neighborhood of most cities will range about in the order indicated; stucco costing a little more than double-wall frame construction. The stucco garage may be finished smooth or in spatter dash ouside, and should be plastered inside. It is better to put both the stucco and plaster on wood laths than on metal laths, as the latter rust through sooner or later. However, if the metal lath is heavy it will last a long time. A garage of stucco and plaster on wood laths is proof against any fire that would not destroy the car itself. If the gasoline tank caught fire the plaster would drop off and allow the laths and framing to burn. The metal lath house would not burn, but would be badly warped.

Concrete Construction Economical

Regarding the selection of materials, in case a more substantial structure is desired, there is little to say other than what might be said on general grounds of the same materials for dwelling construction. In each case the total cost will be determined largely by the cost of transportation. If clean sharp sand can be obtained near by, concrete construction,

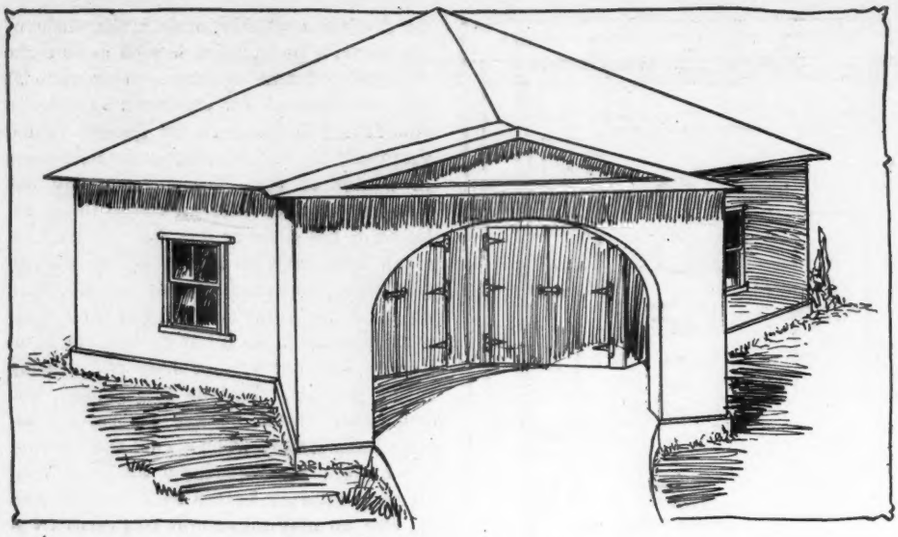


FIG. 7—PERSPECTIVE OF CORNER ENTRANCE GARAGE

either monolithic or block, will be economical. Bricks cost a trifle more, but are easier to lay in freezing weather. Solid concrete walls are perhaps a trifle colder than the hollow block walls, but the blocks are apt to be damp unless carefully made. Sometimes double monolithic walls are used, of course at higher expense. Terra cotta tiles afford a warm and inexpensive construction. They may be laid either horizontally or vertically, the latter being preferable near the ground to drain moisture seeping through the outer skin, and the latter being preferable higher up as retaining the air somewhat better. Field stone, either sharp or broken, is attractive and is not expensive when it may be had in sufficient quantity near by.

Whatever the construction in other respects, the garage floor should be concrete, and it should be drained either toward the center or toward the door. The direction of slope is not important except that it should not be such as to cause the car to roll when the brakes are released. If it drains toward the door it is best to slope the floor to form a shallow gutter deepest in a central fore-and-aft line under the car, and this gutter, rather than the whole floor, can drain to the door. An objection to under-door drainage is the possibility of the doors freezing fast in winter. If the floor has a central drain, the excavation should be large enough to avert flooding. Traps to catch gasoline are sometimes useful, but should be unnecessary.

The Chauffeur's Quarters

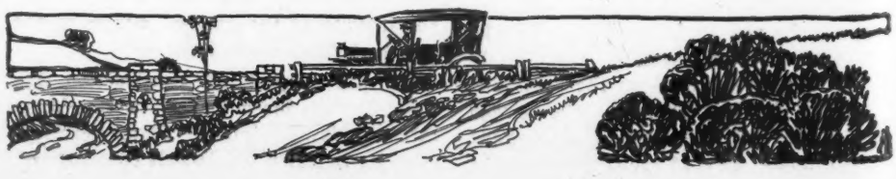
If the garage contains chauffeur's quarters these might be located in a wing adjoining or in a second story. The latter economizes ground space, but to be safe requires complete fireproof separation of the second from the first story. This is accomplished, first, by fireproof flooring of hollow tiles or concrete; second, by approaching the stairs through an outside door instead of by a door leading from the storage room or shop. It is not even safe to compromise on a fireproof door, since such a door must necessarily be heavy and is likely to be left standing open.

If the garage is large enough to permit separating the storage room and the shop, the doors should be so arranged that any car in storage may be turned either by a turntable or by skids and run straight into the shop, and then from the shop out doors with as little additional movement or disturbance of other cars as possible. The ideal arrangement is a straight run through the storage room from the outside door to the shop, with the pit located at the shop end of the run.

As regards lighting, of course there is nothing like daylight. Ideal lighting conditions are afforded by a combination of side windows and skylights with ribbed glass panes. If possible the windows and skylights should be so placed as not to admit direct sunlight on the bodies of the cars. For night work a diffused illumination is better than highly concentrated lighting. The more light that reaches the work and the less that gets in the worker's eyes, the better will be the result. Extension lights should have both wire guards and shades. It is needless to say that electric light is the only proper thing. If it cannot be had, night work should be avoided if possible, and if necessary should be done only under the most extreme precautions against fire. Gasoline should never be used for washing purposes with other artificial lights than electric. Kerosene is slower, but is reasonably safe.

The garage problem hardest to solve in a satisfactory manner is that of heating. For the small one-car garage, as already indicated, it seems to the writer nearly unsolvable. In emergencies a small wood or coal stove may be used. It should be located as far from the car as possible, and it is well to have the floor slope away from the stove, so that if gasoline should be spilled it will not run toward the stove. As gasoline vapor is heavier than air, a possible precaution would be to surround the stove with a wire gauze or sheet metal guard 2 or 3 feet high. Such makeshifts, however, can hardly be considered a serious solution of the problem if any considerable amount of work must be done. If the object is simply to prevent freezing over night, it is possible and fairly safe to hang a lighted lantern over the front end of the car. This, in connection with a non-freezing mixture, will avert the disaster of cracked cylinders. For starting on a cold morning an excellent suggestion recently made is to carry a squirt can of equal parts of sulphuric ether and gasoline, which is squirted into the compression cocks after priming the carbureter. This liquid is volatile even at very low temperatures. Another scheme which has successfully been used, is to run a tube from the gas generator into the induction pipe. When the generator is of the automatic type, which may be stopped and started at will, this expedient is extremely simple. When the car is used only semi-occasionally in cold weather, a non-freezing mixture may not be considered worth while. In that case the water system is emptied after using the car, and the engine is started by refilling with hot water and squirting a little gasoline through the compression cocks into the warm cylinders. The writer, who does not use his car much in winter, draws a couple of pails of hot water from the steam heater in the house when he wishes to use the car.

If the car is to be used through the winter, regular heat for the garage is nearly essential. If the garage is small the best and safest plan is to locate a small hot water heater in a little room separated by a wall from the garage proper and entered from by an outside door, as in Fig. 3. These heaters are quite efficient and need attention once or twice a day. The room containing the heater should be large enough to hold the cylinder oil tank, thus keeping the latter warm. If the garage is large enough to have a basement the heater may be located there, but the floor between the storage room and the basement should be water and air tight, otherwise the heavy gasoline vapor will settle to the basement. The basement must therefore be entered by an outside door, as in Fig. 6. The heating medium should of course be steam or hot water, not hot air.



Current Motor Car Patents

Variable Speed Transmission—No. 955,279, dated April 19; to Frank A. Moore, Sr., Indianapolis, Ind.—As shown in Fig. 3, the transmission device to which this patent relates resembles the conventional type of friction-disk transmission in almost every respect except that the drive is positive. The disk D has on one face a plurality of teeth arranged in sets, S, S1 and S2, the teeth comprising each set being of uniform length, but varying in length from the teeth in the other sets. All the teeth are uniformly spaced and are radially arranged around the axis of the disk wheel as illustrated. The pinion P which is arranged at right angles to the disk wheel D, is rotatably secured to and slidingly mounted on the shaft T, and is adapted to make engagement with the disk D; and the yoked rod L is provided for shifting the pinion P across the face of said disk wheel.

Floatless Carbureter—No. 955,218, dated April 19; to John W. Smith, Stanley, Ia.—The unique features of the carbureter covered by this patent, are the absence of float-feed mechanism, and the simplicity of its construction and operation. As illustrated in Fig. 1, it consists of a cylindrical casing with a removable valve seat S and valve A at one end, while the opposite end E is open to the atmosphere. The stem of the valve A is supported in two guides D and I, between which slidingly mounted upon the stem is a fuel admission valve V. The action of the valve A is controlled at the will of the operator by means of the wedge W and the spring N, while the fuel valve is automatically controlled by the suction of the motor and the spring G. The wedge W is mounted in a rectangular guide which extends diametrically across the open end of the

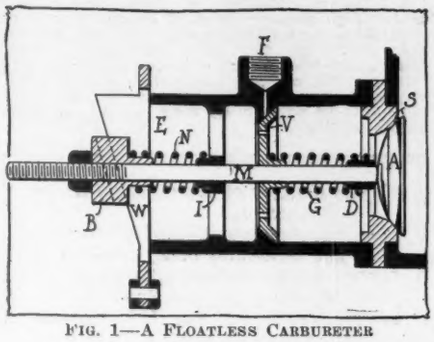


FIG. 1—A FLOATLESS CARBURETER

carbureter, and its inclined edge slides upon a similarly inclined surface on the abutment B which is adjustably mounted on the end of the valvestem M. This wedge limits the opening of the valve A, thereby serving as a throttle. When this valve is allowed to open and a vacuum is produced in the carbureter by the operation of the motor, the valve V is drawn open, uncovering the duct leading from the fuel supply F. Thus the fuel is mixed with the incoming column of air and passes on to the motor through the throttle valve A.

New Float-Feed Carbureter—No. 955,218, dated April 19; to Albert E. Stoker, Detroit, Mich.—This patent relates to a carbureter which is quite unconventional in that the float-chamber is at the top of the apparatus. An idea of its construction and operation may be obtained from the sectional view shown in Fig. 2. The fuel is admitted at F, and after passing the float-valve L, enters the float-chamber. When the butterfly valve R is open and the motor in operation, the vacuum produced in the lower vertical portion of the carbureter draws down the piston valve L. As this valve is drawn down, communication is made between the mixing chamber M and the lower annular channel O, whence air flows into the mixing-chamber M through the openings A, and fuel enters from the float-chamber as the conical valve N is lowered away from its seat. The conical valve N, which regulates the fuel supply to the mixing chamber, is adjustably mounted in the top of the piston valve V; a coil spring S is provided to carry the weight of the piston valve, and a supplementary spring S1 is fitted to limit its travel. It may be adjusted by means of the screw W, which is locked by the thumbnut K. The float-level may be changed by regulating bushing B.

Two-Cycle Engine—No. 955,151, dated April 19; to Ernest T. Gilliard, New York—This patent relates to a two-cycle motor whose only radical departure from the conventional design lies in the fact that an annularly curved screen S, Fig. 4, is diagonally interposed in a chamber formed at the upper end of the gas passage P, which is concentric with and passes partly around the cylinder. In operation, as the piston T ascends, fuel mixture is drawn into the combined crank and compression chamber through the valve V; as the piston T descends, this mixture is compressed, so that when the piston nears the bottom end of its stroke the port I is opened and the gas flows into the working cylinder C. When the piston again ascends, the gas in the cylinder is again compressed, and is ignited as the piston passes over the top center. The explosion of the ignited gases forces the piston down; nearing its bottom center the exhaust port X is uncovered and the burnt gases let out; and descending further the inlet port is uncovered and the fresh charge admitted to the cylinder.

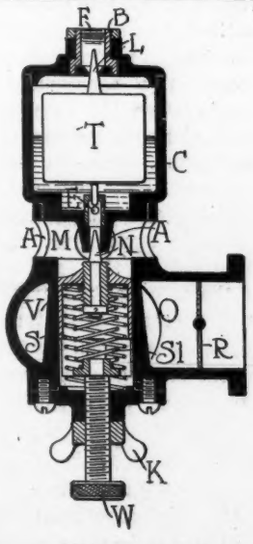


FIG. 2—NEW FLOAT-FEED CARBURETER

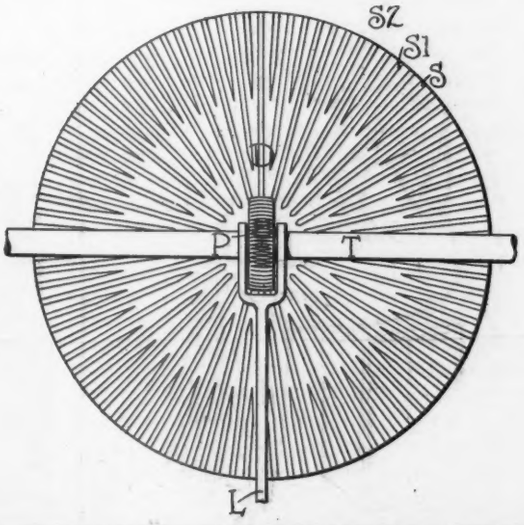


FIG. 3—VARIABLE SPEED TRANSMISSION

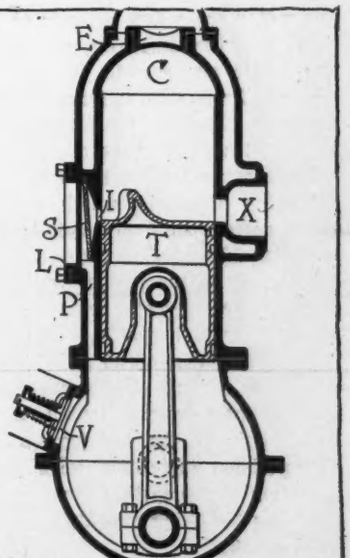


FIG. 4—TWO-CYCLE ENGINE DESIGN

The Readers' Clearing House

OVERHAULING A KNOX

ST. CHARLES, Ill.—Editor Motor Age—The recent article in the Readers' Clearing House pages of Motor Age, which so clearly described and illustrated the methods employed in overhauling a little Maxwell car, has not only assisted me greatly, but has prompted me to submit a similar article on how I overhauled the motor of a large four-cylinder Knox car. Since the purchase of the car last summer, it has been run about 3,000 miles, over fairly good country roads. It ran beautifully and never gave any trouble whatever—until recently—when it would run a trifle warmer than usual; and in climbing hills on the high gear, as soon as the motor was subject to a severe enough pull to perceptibly slow down the motor, there would be a choking or coughing in the carbureter, which necessitated immediate declutching and shifting to a lower gear. I am aware of the purpose of the gearset and am not prone to hang on to the high gear until a change is absolutely necessary to prevent stalling the motor; on the contrary, I always have changed to a lower gear before starting a steep ascent rather than having to make a change on the hill; and when I have thought it necessary to change to a lower gear on a hill, I always have done so as soon as the motor began to slow down, and before it began to labor.

Recently I was forced to change to a lower gear on hills which were previously ascended many times on the high gear without apparently subjecting the motor to any strain whatever. Naturally, I suspected the carbureter to be out of adjustment, and after consulting the manufacturer and several experts, made the required adjustments; but, still, the improvement was but slight, and on racing the motor for a few seconds at a time, a faint rumbling knocking was audible and the whole car seemed to vibrate. This was due, I was told, to loose connecting-rod bearings. Further consultation of an expert, and a close study of the instruction book furnished with the car, led to the following diagnosis, which proved to be quite correct in every detail: An accumulation of carbon in the cylinders, which caused the motor to run warmer than it should; the magneto, which was set for exceedingly high speeds, was set too high for the moderate speed at which I generally traveled, and this in connection with the carbon deposit caused preignition, which induced the bucking on the hills, and perhaps interfered with the proper operation of the carbureter; and the slight rumbling knocking was due to loose connecting rods.

It then was decided that the motor should receive a general overhauling, and it might be well to mention that the day before the overhauling the car ran worse than ever before; there was a constant intermittent misfiring which was very annoying. Almost every feature of the motor was inspected and readjusted and my pride as an experienced motorist was crushed almost, when it occurred to me that the compression had not been tried. One cylinder hardly had any compression at all. None of the valves ever had been ground since the purchase of the car, and consequently they were the last to be suspected.

In order that I might more clearly describe the operation performed in overhauling the motor, I have clipped two views of it from the catalog issued by the manufacturer and also made one or two sketches, which I hope will give an idea of the methods used. The first thing I did was to remove the pan under the power-plant and had it thoroughly cleaned, then after laying a robe under the engine so that I might be comfortable and keep as clean as possible, I started to loosen the nuts which secured the bottom half of the crankcase. Having removed all but two nuts, one on either side in about the center, as well as the studs which secured the front end of the engine gear housing, I carefully loosened up the two remaining nuts until they were held by only a few threads, and tried to lower the bottom half of the case. The case did not drop as readily as I expected, and I was in quite a dilemma as to what might be the cause of its sticking, for I had loosened or removed all nuts and bolts, including the connection of the main oil pipe at the right side of the case. A thorough inspection revealed three tapered pins, one at the position P in Fig. 4, and one at each of the other two accessible corners of the crankcase. These were driven in from the bottom, as could be readily seen; so I again tightened up the two nuts which I had left on either side of the case to prevent it from dropping and with a hammer and drift had no trouble in knocking out the pins from above. On again loosening up the two remaining bolts the case dropped down as the nuts were loosened, and no more difficulty was met with in removing this part from the motor.

Explicit instructions are given in the instruction book, at which I never had thought to look since the car was purchased, in regard to renewing the oil in the lower portion of the crankcase. This never had been done, it having been simply added to occasionally, consequently the oil found therein when the case was removed was very dirty and positively unfit for motor lubrication. This oil was now thoroughly cleaned out, however, and every nook and corner in the case flushed with gasoline and a squirt gun. The oil pipe designed to show the level in the lower part of the case was not overlooked in this cleaning process. With the lower half of the case thus removed, the internal mechanism of the crankcase was rendered accessible. In taking up a comfortable position on my back under the motor, with my head resting on one of the seat cushions, I prepared to take up the play in the connecting rods. The preparation for this work comprised the removal of the spark plugs from the cylinders to relieve com-

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to papear, he may use any nom de plume desired.

To the Readers of the Clearing House columns:

Motor Age has insisted of late on bona fide signatures being attached to every communication published in these columns. It has come to the attention of Motor Age that some signatures, which apparently have been bona fide, have proven otherwise, in that communications addressed to them have not been received and the postal authorities have replied that such parties are unknown. Where cases of this kind arise, an investigation will be made and the correct names of the offending parties published. Motor Age has in the past discovered the correct name and address of one party guilty of wrong signature and will spare no efforts in the future to hunt down other offenders of this nature.

FIG. 1—GRINDING KNOX VALVES

pression, the arrangement of the necessary wrenches, etc., around me, so that they could be conveniently reached, and the furnishing of myself with two pieces of clean cloth. The first thing I did was to wipe off all the oil from the rods and crankshaft so it would not be continually dropping down into my face and onto my clothes, and so my hands might be kept clean during the operation. As advised in the repair shop columns of Motor Age, I have found it more convenient to use cloths than waste on such parts of a motor mechanism. I then turned the motor over several times by taking hold of the flywheel, to see just how much effort was required to turn the motor over, and also to see if it ran freely at all positions of the crankshaft. This was to test for a possible bend in the crankshaft.

After turning the crankshaft into a convenient position, I took hold of the first connecting rod and worked up and down on it to see if it was loose; as there were no indications of looseness, I tried the second rod and found it quite loose, the looseness being indicated by a slight swishing sound as the rod was worked up and down, and also by the movement of the oil at the edge of the bearing. The third rod was as loose as the second one, and the fourth one only had a very slight amount of play, no sound being audible on working up and down on the rod, the only indications being produced by the movement of the oil in the space between the edge of the rod and the crankshaft. I then removed the nuts of the second rod, carefully laid them on the riding springs of the car in a position that would enable me to know on which bolt they belonged, and carefully lowered the bearing cap with its shims. Taking out two of the smallest or thinnest shims, or liners as they are sometimes called, one from either side of the cap, I replaced the cap properly, applied the nuts, and drew them up as tightly as possible. Fortunately, the shims which I removed were of exactly the required thickness, for the bearing had no lost motion and the flywheel turned over just as readily, or at least almost as readily, as before taking up the bearing.

Replacing the cotter keys I proceeded to the next rod. This was not so easy; on taking out two of the thinnest shims the

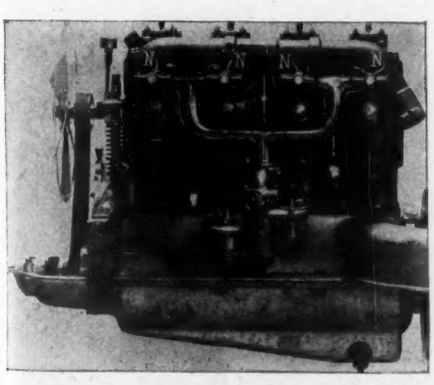


FIG. 3—LEFT SIDE OF KNOX MOTOR

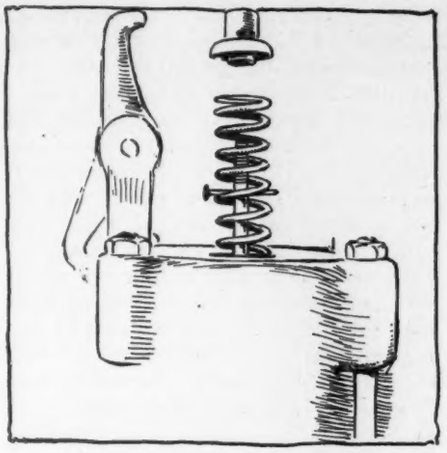


FIG. 2—REPLACING VALVE SPRING

bearing still was too loose; and on taking out two of the next size larger and replacing the thinner ones, the bearing was too tight, the flywheel could not be turned with sufficient ease to insure that the bearing would not run hot. This required that special shims be employed; so with one of the regular shims as a pattern, I cut two more from a sheet of copper which seemed to be about the right thickness. After fitting these new shims into place, and trying several combinations of thick shims and thin shims, being careful always to keep them in pairs, I could not obtain a proper fit. Some time was lost in finding a piece of sheet metal from which shims of the proper thickness could be made. Having satisfactorily adjusted the third bearing at last, I proceeded to the fourth, and found that by simply drawing up the nuts hard the bearing was sufficiently tight. Every time a bearing was tried or tightened the flywheel was turned completely around and oscillated back and forth at several positions to see that it remained comparatively free. Extreme care was used to see that all bearing caps were replaced in their original positions—the right cap on the right rod, and the right side of the cap on the right side of the motor. As only one bearing cap was removed at a time, there was no danger of getting a cap on the wrong rod, and there would have been no difficulty even though more than one rod was removed at a time, for each cap and rod was properly numbered. The camshaft bearings were inspected and found to be in A1 condition, so after a careful inspection to see that all cotter pins were in place and all parts perfectly clean, the bottom half of the crankcase was replaced.

When the case had been taken down, the nuts and bolts had been laid opposite their respective holes on the ledge or flange of the upper half of the case, so that in replacing the case it was held in position with one hand and one knee while one of the side bolts was fitted into place and its nut drawn up as tight as possible by hand. Then a bolt was fitted into place at the opposite side of the case and drawn up in the same manner, tightly by hand.

The case was now held into position so that the rest of the bolts could be readily fitted into place and their nuts drawn up by hand in the same manner. I neglected to state that all nuts and bolts had been thoroughly cleaned with gasoline and a brush, which made it possible to make all the nuts fairly tight without the use of a wrench. A wrench was now brought into use and all the nuts gradually and evenly drawn up, by passing round and round the case, giving each nut a couple of turns until all were reasonably tight. The three pins were driven into place and the job was complete.

I next tackled the cylinder heads. Starting on the left side of the motor the four nuts, N Fig. 3, holding the yokes which clamp the exhaust and intake pipes into place, were loosened, the supply pipe to the carbureter was disconnected as well as the carbureter control rod, and the intake pipe with the carbureter attached taken off. The exhaust pipe was swung around out of the way without disconnecting or loosening the joint near the dash. All water was drained from the motor, and the exhaust water manifold and its component water connections were loosened or removed by taking off the four nuts N in Fig. 4. There was nothing more now which prevented the cylinder heads from being removed except the four nuts on top of each, so starting with the first cylinder I removed the head, cleaned out all the carbon, both on the head of the cylinder and the piston and on the walls of the combustion chamber, by scraping. While the head was off the valves were examined by simply raising them sufficiently to see the seats; and, being apparently in very good condition and as the compression on this cylinder had been very good, they were not removed. Care had been taken in removing the cylinder head to see that the push rods which operate the valves were properly marked, that the gasket between the cylinder head and cylinder proper was unmolested and in good shape, and that the water bends had been laid in positions which would enable me to tell on which cylinder they belonged, so that in replacing the head there was no trouble. It is an important point to be remembered by all motorists, that whenever the parts of a motor

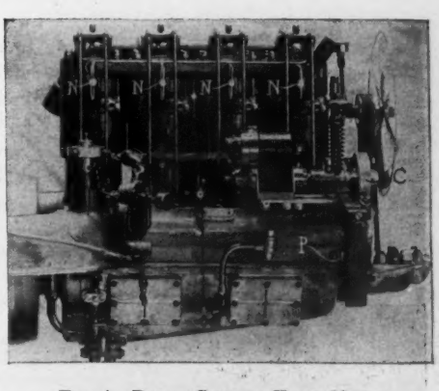


FIG. 4—RIGHT SIDE OF KNOX MOTOR

mechanism, in fact of any mechanism, are disassembled, that extreme care should be used to see that all component parts are properly marked; so that in case similar parts should not be absolutely interchangeable, there would be no trouble in getting them back in their original order.

Each cylinder received the same attention except the last one, in which the poor compression had been found; and in this cylinder both valves were thoroughly ground to a perfect seat. All water connections were insured against leaks by scraping all the old dried-up white-lead from the gaskets and fresh white-lead applied. The entire motor was thoroughly cleaned up outside with gasoline and a brush; every moving part, every bearing and oil cap was oiled, all spark plugs were thoroughly cleaned and the space between them examined before replacement; a fresh supply of oil was put into the crankcase, and after properly making all oil, gasoline and water connections and going over the motor again to see that everything was in shape, the carbureter was adjusted according to the instruction book. After setting back the magneto driving gear one tooth, by lifting the cover C, Fig. 4, and turning the gear back, the motor was started. It ran as sweetly as ever.

In Fig. 1 a sketch is shown of the position ocupied as the valves of the missing cylinder were ground in; and Fig. 2 illustrates a means provided for by the Knox company for replacing the valve springs. A hole is drilled through the stem just below the threads, through which a nail may be inserted, so that it is only necessary to place the spring over the stem, then screw it around till the thread is clear and the spring retainer cap started on the thread.—F. E. H.

TO PREVENT FLOODING

Indianapolis, Ind.—Editor Motor Age—In Motor Age, issue March 21, page 18, I noticed a communication from D. H. Livingston, of Cedar Rapids, Ia., in which he complained about the chronic flooding of a Wheeler & Schebler carbureter. I have been troubled in the same manner and when I complained to the W. & S. people I was informed that the trouble was due to a deposit on the float valve that prevents the proper seating of the valve. They provided me with a new valve and offered to overhaul the carbureter and put it in good shape free of charge, and further informed me that some gasoline was comparatively free from sulphur, and I found that after putting in the new valve and changing my gasoline supply I had no further trouble the rest of the season. This was last year. This spring I began using Standard gasoline again and, sure enough, in a week or 10 days I noticed the dripping. However, I had fortified myself against just this thing by having an additional cut-off valve put in the gasoline line at the carbureter, so that now when I leave the car for any length of time I raise the hood and turn off the gasoline. This also has the added advantage that if anyone should attempt to run off with my car he would not get far and would have some trouble finding out the reason. I have never been able to find the reason why manufacturers do not provide some means to cut off the gasoline without rolling under the car. I am not familiar with all makes of cars, and in some cases it may be done, but I have never yet found a car so arranged. In connection with what has been written above, I may state that the W. & S. people have informed me this spring they have found a means of overcoming the corrosion of the valve—I think by using a metal other than brass. I will not be sure of this, as my information was received over the telephone and that is not always reliable. They also asked me to drive down and they would gladly fix up my carbureter so that I would have no cause for further complaint. I am sure your reader will receive proper attention from them.—Subscriber.

CARBURETER TROUBLES

Wabash, Ind.—Editor Motor Age—Will Motor Age answer the following questions through the Readers' Clearing House?

1—What are the indications that the carbureter is getting too much gas, or not getting a sufficient amount?

2—What are the indications that the carbureter is getting too much air, or not getting the proper amount of air?—H. W. Dunbar.

Only a certain volume of fuel can be drawn into a cylinder at a stroke; if the proportion of gas in this mixture of gas and air is abnormally great the speed of the motor is generally reduced, and the engine runs warm and is apt to overheat. If the proportion of air in the mixture is abnormally great, there will be back-firing and popping in the carbureter, accompanied by mis-firing in the cylinders; and if ignored, overheating will take place. A mixture that contains too much air but not enough to cause backfiring, is indicated by a loss of power.

CLEANING A RADIATOR

Topeka, Kan.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give some methods for cleaning out the scale or deposits of lime in radiators and water chambers in motor car engines. I have a model R Ford that has run 2 years and I think it needs cleaning. Kindly state the preparations that are on the market and which may be used without danger of injury to the engine and radiator.—Charles Wierenga.

Almost any of the boiler compounds on the market obtainable from many of the engineer supply houses may be conveniently used for cleaning the scale or deposits of lime from a radiator. If you prefer to make your own compound dissolve 2 pounds of crystals of soda to each gallon of water contained in your cooling system, put it in the radiator, run the motor for a few seconds so that the solution is well distributed throughout the system; let it stand over night, then flush out thoroughly in the morning with clear water.

FOR READERS TO ANSWER

Indianapolis, Ind.—Editor Motor Age—Will some of the readers of Motor Age inform me as to the use of condensers across the gap in spark plugs? In all applications of electricity where a high-tension spark is used, a condenser of some type or other is used, bridged across the spark gap to intensify the spark. In a battery and coil ignition system no condenser is used except across the vibrator points. I have experimented with a condenser across the plug gaps and I find that it increases the thickness and intensity of the spark about 500 per cent. I would like to be informed as to why such an arrangement of condensers is not regularly used on jump spark ignition systems. There must be some valid objection against it and I would like to know what it is. If there is any objectionable feature about such an arrangement and the objections can be overcome, it looks as though the efficiency of such ignition system would be greatly increased. I would like to see this explained by some of the readers who are thoroughly familiar with the subject, or by some of the manufacturers of ignition apparatus.—Homer Ashbaugh.

KEROSENE FOR COOLING

Gotham, Wis.—Editor Motor Age—I enjoy Motor Age very much, especially the Readers' Clearing House columns, and now I would like to ask a few questions, too.

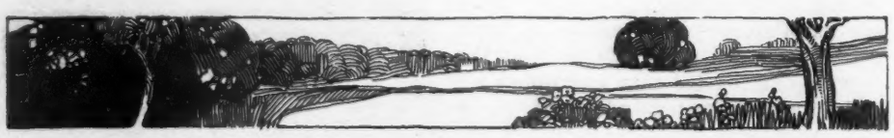
1—Is there any danger in using kerosene for cooling in freezing weather? I know of a party who uses it in his Buick and he considers it fine.

2—Will the old style Dunlop 30 by 4-inch tire fit the old style Dunlop 28 by 3-inch rims; if so, will the motor work harder on country roads because of this extra 2 inches added to the height of the wheel?

3—Should there be sufficient oil kept in the crankcase of a single-cylinder Cadillac at all times so that the crank would dip into it on each revolution? If so, how deep should it dip into the oil?

4—Should castor oil or other lubricant be used on the clutch of a single-cylinder Cadillac, or is it better to leave it alone? Is it better to have the clutch go in rather tight when thrown into high?

5—Could readers of Motor Age give me any light on steel tire cases, such as Kim-



ball tire cases or other similar cases?—Pleased Subscriber.

1—There is no danger in using kerosene for cooling in freezing weather if it is possible to keep the kerosene from leaking from the cooling system. This might be found difficult because kerosene will leak very much more readily than water. Then, again, care must be taken in using kerosene to see that the motor does not become overheated, for it has not the cooling efficiency of water. The cooling agent that is most commonly used is a mixture of alcohol, glycerine and water. A 30 per cent solution of half glycerine and half alcohol in water will remain fluid as low as 5 degrees below zero; a 25 per cent solution as low as 8 degrees above zero, a 20 per cent solution as low as 15 degrees above and a 10 per cent solution 25 degrees above.

2—No. The tires mentioned above will not fit the 28 by 3-inch rims.

3—A quarter of a pint of oil always should be kept in the crankcase of the motor. An engine that has too much oil will allow same to leak back into the combustion chamber and carbonization of the cylinders will result.

4—The transmission gears should have about ½ pint of heavy oil every 300 or 400 miles of use. This rule applies to average conditions. If used on hilly, muddy or sandy roads where the hill-climbing gear is much used, 100 miles might be far enough on one oiling, although that would mean exceptionally severe conditions. A very complete book of instructions for the operation and care of the single-cylinder Cadillac is issued by the Cadillac company.

STARTING ON MAGNETO

Newbern, Tenn.—Editor Motor Age.—I have a new model T Ford car, live about 90 miles from a garage, and know very little about a car. This car cranks off a magneto, and has no batteries. It is simply unreasonably hard to crank, and on a cold morning almost an impossibility. I open the throttle and prime the carbureter before starting, but to no apparent avail. For fuel I use White Rose gasoline. Would a cheaper gasoline vaporize better, or would a set of batteries remedy the trouble? Do batteries harm a magneto? If I need batteries, what kind would be advisable.—Perplexed.

It is necessary in starting on a magneto to turn the crank over so that the pistons pass over their firing centers quickly, in other words, in cranking the motor jerk it quickly over the point where maximum compression is encountered. This will cause a stronger electrical impulse in the induction coil on the dash and a hotter spark will take place at the ignition plug. It is often necessary under the conditions above mentioned to spin the motor, that is, turn it over rapidly a number of times before it can be started. It might also be advantageous to advance the spark a trifle more than usual when starting, being careful, however, so as to take up a position relative to the starting crank that will not be dangerous in case of a back kick. A little practice at spinning will in the course of a few weeks render one very efficient at the art, and when accomplished will greatly facilitate the starting. If it is your desire to use a set of four dry cells or a storage battery, you will find a terminal of the coil in front of the dash, which has no wire attached to it. Lead a wire from the battery to this terminal and connect the other wire from the battery to some nut on the motor or on the frame, if there is good metallic contact between the motor and the frame. To start the engine turn the switch on the coil as far over as possible in the opposite direction as in starting on the magneto, crank the engine in the usual manner, and when it has started switch over on to the magneto. The change from the battery to the magneto must be done quickly.

SEVERAL QUESTIONS ANSWERED

Newell, Ia.—Editor Motor Age—Will Motor Age kindly answer the following questions through these columns?

1—What kind of a transmission has the Metz car, and is it a good car on ordinary hills?

2—Is the Ford company licensed under the Selden patent, or is it still fighting the patent?

3—Where are the best training quarters for racers in Illinois, Iowa, Missouri, Ohio, etc.?

4—Does a cut-out on a car increase the power?—Subscriber.

1—The Metz car has a conventional type of friction-disk transmission; Motor Age knows of no reason why it should not successfully negotiate any ordinary hills.

2—The Ford company is not licensed under the Selden patent.

3—Your question as to training quarters in the states above mentioned is rather vague, and Motor Age would refer you to the specially constructed speedway at Indianapolis, Ind., which is most adapted to this sort of training.

4—Yes, in most cases a cut-out between the muffler and the engine will increase the power of the motor when in use.

GLIDDEN SUGGESTIONS

Creston, Ia.—Editor Motor Age—Will Motor Age in the Readers' Clearing House bring this suggestion of a route from St. Joseph, Mo., to Des Moines, Ia., for the Glidden tour before the proper authorities? I have traveled this course and find the best roads to be as follows: St. Joseph, Maryville, Hopkins, Bedford, Ia., Lenox, Creston, Winterset and Des Moines. If desired I will get reports from motorists as to best roads to follow between Maryville, Mo., and Winterset, Ia., as I am acquainted.—H. W. Edaburn.

PACKING A CYLINDER HEAD

Milton, N. D.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me how to properly pack the cylinder head of a small stationary engine, and where I can secure the best material? Will Motor Age kindly give a description of the Buick White Streak?—A Reader.

Provided the proximating faces of your cylinder and its head are perfectly true, as they should be, cut a gasket from a piece of heavy wrapping paper or drawing paper such as is used by draftsmen. If the cylinder head is waterjacketed and the waterjackets are opened up when the head is removed, this gasket should receive an application of white lead on both sides, then stuck on to the cylinder surface and the head fastened down upon it. It sometimes happens that after a cylinder head has been removed a number of times and the old packing scraped off that the surfaces are rendered untrue. In such cases sheet asbestos or Mobiline sheet packing has been found to give good service. When the motor is of such construction that the waterjacket of the cylinder is not continuous with that of the cylinder head, white lead will not be necessary on the packing employed, but a little flake graphite sprinkled and smeared on the proximating faces and the gasket will prevent it from sticking and make the joint more secure. The Buick car sometimes called the Buick White Streak, is the model 16 which is a four-passenger tourabout, with the rear seat and box removable. It has a four-cylinder vertical water-cooled motor of the valve-in-the-head type, with the cylinders cast in pairs, and having a 4½-inch bore and 5-inch stroke which gives a horsepower rating of 32.4. The motor is mounted on a subframe, and transmission therefrom is by means of a leather-faced cone clutch of Buick design through a selective sliding gearset giving three speeds forward and reverse, then through a single universal joint and a propellershaft enclosed in a torsion tube to the semi-floating rear axle. Wheels are fitted with 34 by 4-inch tires, the tread is standard, and the wheelbase is 112 inches. The frame and subframe are of pressed steel channel construction, springs are full-elliptic in the rear and semi-elliptic in the front, and the brakes are of the internal and external type operating on the rear wheel drums. In the motor of this car a flat tube radiator, a belt-driven fan and a pump are features of the cooling system; ignition is jump spark with a magneto and dry cells as sources of current; and lubrication is by means of a self-contained circulating system.

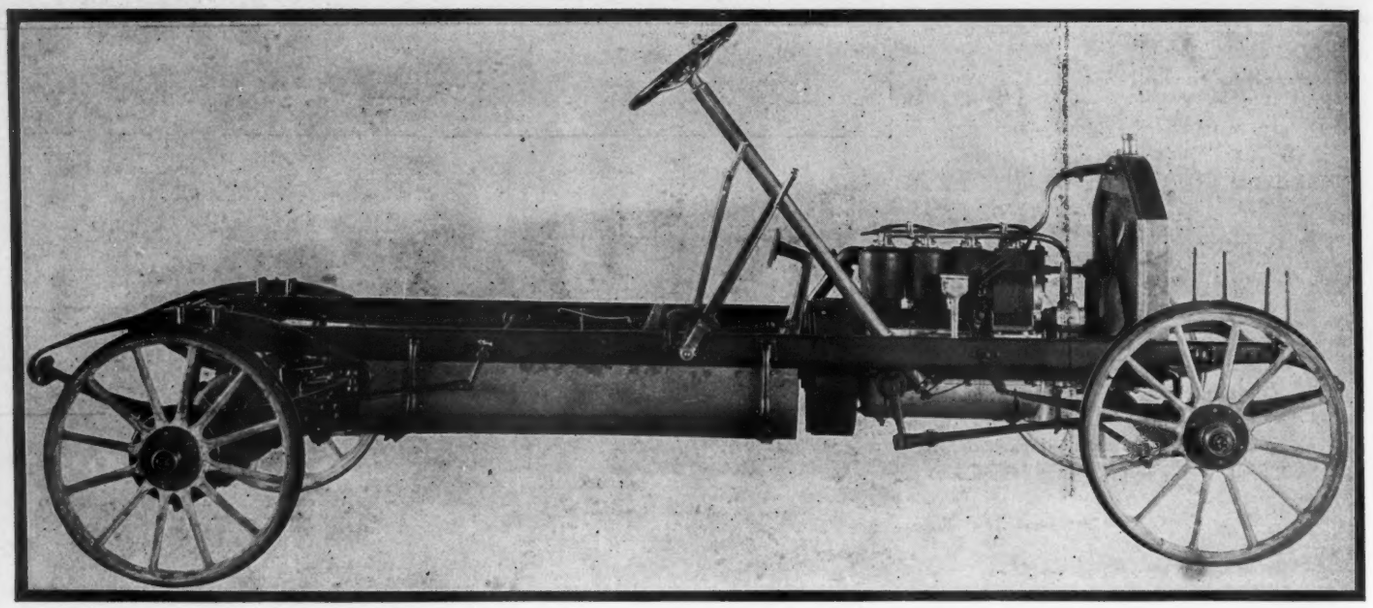


FIG. 1—RIGHT SIDE VIEW OF THE 30-HORSEPOWER CLARK CHASSIS SHOWING FRAME AND SPRING DESIGN

Chassis Design and Construction

IN addition to the commercial cars manufactured by the Clark Motor Car Co., Shelbyville, Ind., this company has entered the pleasure field for 1910 with two five-passenger touring car models known as the Clark 30 and 40. These cars are of conventional design and identically the same in every respect except for the proportionate increase in the dimensions necessary for the heavier cars. The characteristic features of these models are an up-to-date Rutenber motor, which is of the four-cylinder four cycle water cooled type; a leather-faced cone clutch, from which power is transmitted through a single universal joint; a propellorshaft inclosed in a torsion tube; a selective sliding gearset in unit with the rear axle housing, and a semi-floating type of rear axle to the rear wheels, which are 34 inches in diameter.

In Figs. 1 and 2 the general layout of the chassis may be seen. As shown in Fig. 3, the pressed channel steel frame is perfectly straight; the motor, which is supported on a subframe S, also of channel construction, hangs very low, so that when the car is loaded practically a straight-line drive is obtained; the torsion tube T, which incloses the propellorshaft, has a yoke Y at its forward end which is flexibly connected to the side members of the subframe at the points B. Between the rear end of the torsion tube and the bevel gear housing is situated the gearset G; and attention is called to the generous length of the mud pan, as shown in Fig. 1.

The motors of these cars have vertical cylinders cast separately, with integral valve chambers and waterjackets. The bore and stroke of the smaller engine are 4 inches square, giving a formula rating of 25.6 horsepower; while the larger motor has a 4½-inch bore, a 5-inch stroke, and a formula rating of 32.3 horsepower. The crankshaft is a solid drop forging and has five mainbearings, which are supported in the upper half of the crankcase. The crankcase is of aluminum and is supported by four legs on the subframe of the car. These legs are cast integral with the upper portion of the case, which is divided horizontally with the lower portion, removable for the inspection or adjustment of the motor bearings. The lower section of this case is cast with a horizontal partition to form a splash chamber and reservoir for the circulating lubrication system employed. In this lubrication system the oil from the reservoir is drawn through a gear pump situated at the forward end of the case and forced into the splash compartments where a predetermined level is maintained, the superfluous oil being allowed to drain back into the pump of the case, from which it is again drawn and circulated after first passing through a strainer.

The Rutenber motor has been on the market so long that a description of it seems almost superfluous. All similar parts are made interchangeable by a very extensive use of jigs and templets, so that replacements may be quickly obtained at a nominal charge. As for the material employed in the construction, the crankshaft is a steel drop forging ground to size and provided with a flange to which the flywheel is bolted. Cylinders and pistons are made from a special gray cast iron mixture and also ground to a standard size. Each piston is provided with four or five eccentric rings with square cut joints, according to the size of the motor and oil grooves are provided at the lower ends of the pistons to facilitate cylinder lubrication. Piston pins, which are made of hardened steel and ground to a fit, are of large diameter; and the connecting rods, which are dropped forged from a high grade of open hearth steel, are adjustable at the lower ends and bushed with babbitt bearings. All bearings throughout the motor are of phosphor or babbitt bronze and scraped in. The valves are one-pieced drop forgings, of the same size, thoroughly annealed, and the valve lifters, which are of hardened steel, operate in bronze guides. Timing gears are made from steel drop forgings,

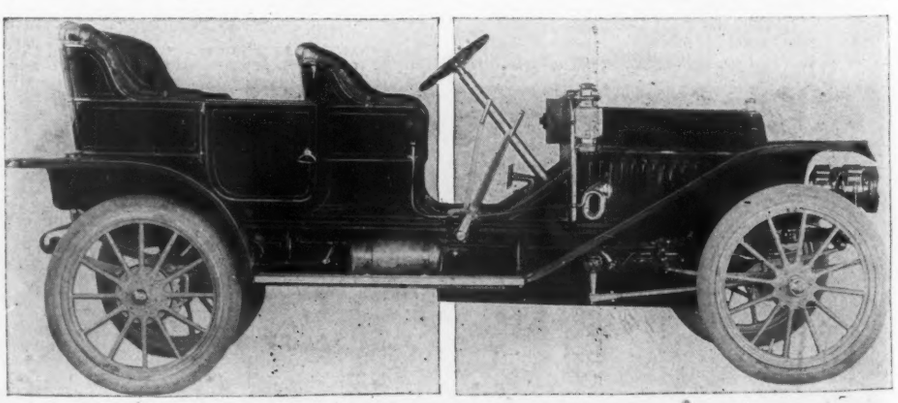


FIG. 2—SIDE VIEW OF THE NEW 1910 CLARK TOURING CAR

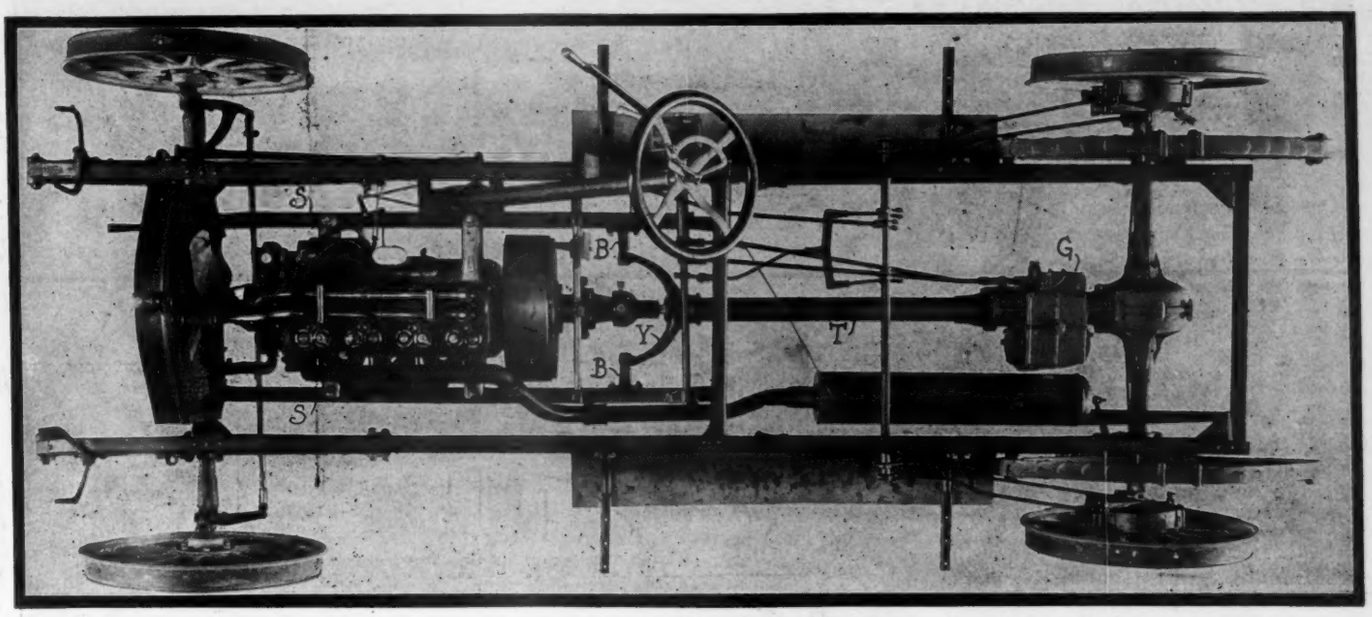


FIG. 3—SHOWING SIMPLICITY OF CHASSIS DESIGN AND ARRANGEMENT OF ITS INTERESTING FEATURES

Of the 1910 Clark Touring Cars

as are the camshafts with their integral cams, and the latter are case hardened all over and ground to size. The intake and exhaust piping is of original Rutenber design and construction, and can be readily removed from the motor by loosening four nuts and disengaging the yokes which hold it in place. Water manifolds of brass tubing are very simple and direct, and so arranged that but two short accessible hose connections are required in the system. The water pump is of the gear type, made entirely of bronze, except for the bearing shafts, which are of steel, and it is directly attached, through a self-centering square jaw coupling, to the forward end of the camshaft, in such a manner that it may be readily removed by loosening four bolts. The fan, which has a malleable iron spider and steel blades, is mounted on two sets of ball bearings and driven by a flat belt from a pulley on the crankshaft, and the bracket supporting the fan is adjustably attached to the forward cylinder. To complete the cooling system a vertical flat tube radiator is employed. A dual system of jump spark ignition is fitted with batteries for starting and a Remy magneto for regular service; and an induction coil provided with a push button for starting on the spark is conveniently located on the dash. The magneto is also accessible, being located on a base cast integral with the right fore leg of the engine; and its driving gear is thoroughly inclosed in an oil-tight case, and driven off the vertical shaft, at the lower end of which the oil pump is situated. The carbureter, which is of the latest Schebler type, is situated on the opposite side of the motor, so that crowding of the motor fittings is avoided; and they are so arranged that any necessary adjustments may be readily made.

The clutch employed on these cars is contained in the flywheels and, as shown in the illustration, its control mechanism is extremely simple and direct. The cone is 15¾ inches in diameter, has a 2½-inch face, and blades springs are fitted beneath the leather in order that it may engage smoothly on starting the car. The universal joint interposed immediately behind the clutch also is a simple construction and each shaft is drilled, grooved, and provided with a grease cup to facilitate its lubrication. The end of the propellorshaft, where it enters the universal joint, is squared and of a sliding fit, and supported on a roller bearing which is also provided with a large grease cup. The gearset, which is located at the rear end of the torsion tube and gives three forward speeds and reverse, is very compact. Its main and countershafts are in the same horizontal plane. It is of the selective sliding gear type with the control lever of the rocking pattern operating in an H quadrant. Both shafts are short and stout and mounted on annular ball bearings, while the gears are of a high grade of steel running in oil. The rear axle is a conventional semi-floating type with its lateral driving shafts mounted on Hyatt roller bearings. A steel case incloses the bevel driving gears and differential mechanism, which is packed with hard grease.

The standard gear ratio of the driving gears is 3 5/10 to 1, and the diameter of the lateral driving shafts is 1¼-inch. The front axle is of special drop tubular construction with forged steering knuckles of large dimensions. Steering is by means of a worm and sector, mounted on ball bearings, thoroughly inclosed and packed in grease with adjustments provided for taking up lost motion. The pressed steel frame, which is 3½ inches deep and 1½ inch wide in the middle section, is 137 inches long with all members hot riveted together. It is supported on semi-elliptic springs in front and full elliptics in the rear, the front ones being 38 inches long, 2 inches in diameter, and having five leaves, while the rear ones are 40 inches long, 2 inches wide, and equipped with six leaves each.

The body equipment of these cars is finished in Russian blue with fine gold stripes, while the wheels are a light gray.

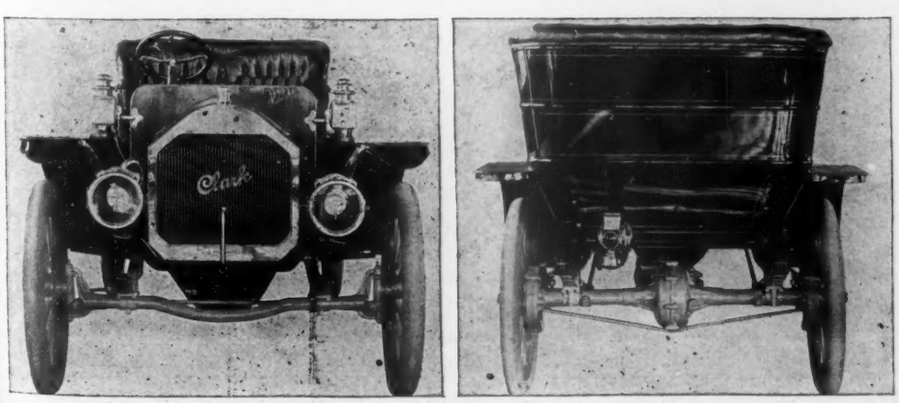


FIG. 4—FRONT AND BACK VIEWS OF CLARK 30 TOURING CAR

Manufacturers' Communications

Concerning Valve Positions

DETROIT, Mich.—Editor Motor Age—Theoretically, the location of all valves in the head is considered the best practice, as it reduces the exposed wall surface of the combustion chamber to a minimum, thus reducing the tendency of the heat of the combustion to escape through these walls. Figs. 1 and 2 illustrate two of this type. However, mechanical features of design limit the use of this type. Large valves cannot be used in the Fig. 2 type; and in the Fig. 1 type, where the valves are at an angle, either an overhead camshaft or an elaborate valve gear which increases the height of the motor greatly, is necessary. After these the most common type is the one with all the valves on one side of the cylinder. This permits as small a combustion chamber as possible without having valves in the head. The disadvantage is that it usually makes the valve springs inaccessible and limits the size of the valves, especially in motors of small bore.

The T head motor, Fig. 3, which is most popular in Europe, is theoretically the worst type because its combustion chamber has the greatest wall surface. It is preferred chiefly because valves can be made as large as desired and can be actuated directly. An alternative which is better than any of these types has the inlet valve in the cylinder head and the exhaust in a chamber at the side. This scheme not only gives a smaller combustion chamber than the other, but also does not restrict the size of the valves. At least as early as the Irish Gordon Bennett race the Mercedes employed this valve location, and has continued to do so ever since. The fastest and most successful American racer, the Locomobile, also used the same system. The fact that it was selected and retained on the most successful racers of the last few years certainly indicates that it must have some merit.

One of the first 1909 models announced, Chalmers, had this valve location. This year it has been brought out by another well-known manufacturer. Three companies will now be using it and the two which previously have had it still continue it for 1910. The Mercedes always has used it on some of its cars and invariably on its racers. After discontinuing it on its smaller cars for several years it has been revived and is now found on its smallest car for 1910.

Perhaps no other advantage will appeal to the average user of a motor car, especially if he cares for it himself, so much as a ready method of cleaning the cylinders of carbon. By removing the inlet valve when located in the head, a large opening is presented, giving easy access to the interior of the cylinder and piston head for cleaning. If the cap over the exhaust valve is removed no artificial light is needed to work by. Scarcely a minute is required to remove both inlet valve and the exhaust cap.

By placing the inlet rather than the exhaust valve in the head the gain is two-

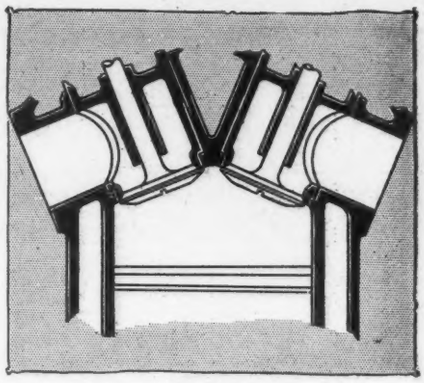


FIG. 1—VALVES AT AN ANGLE

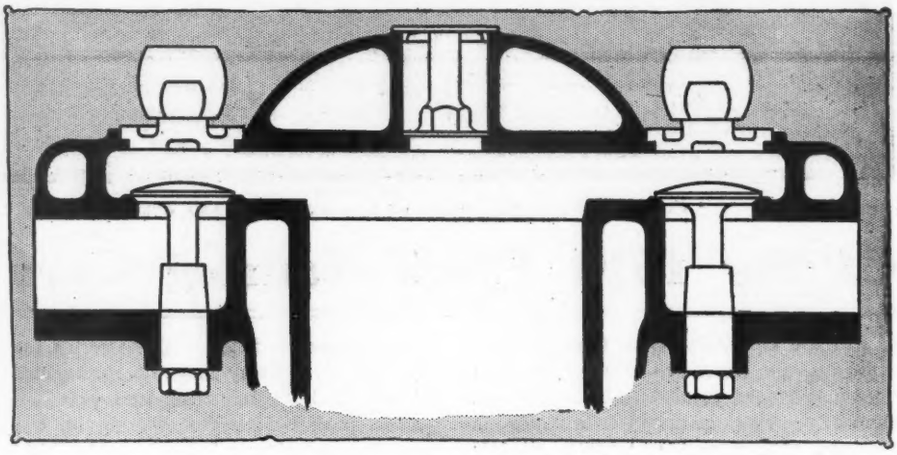


FIG. 3—VALVE ARRANGEMENT IN T HEAD MOTOR

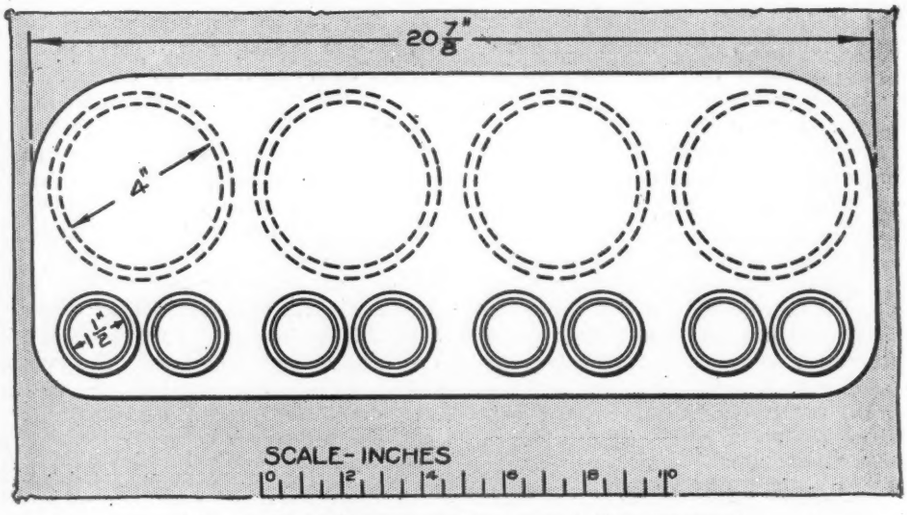


FIG. 4—VALVE SCHEME IN MOTOR WITH L-HEAD CYLINDERS

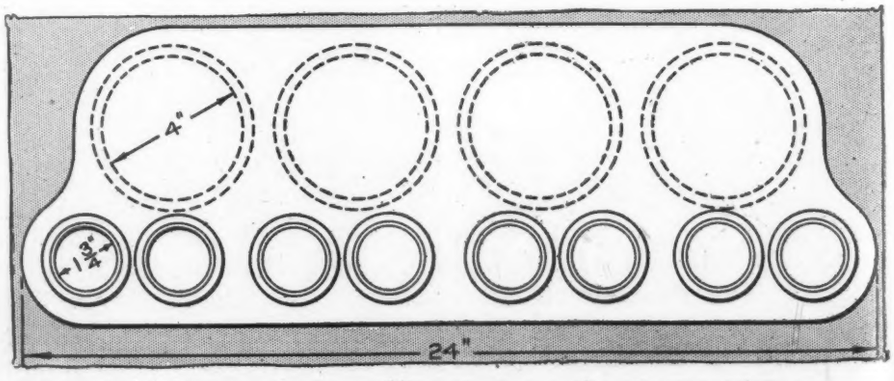


FIG. 5—LENGTHENING THE CYLINDER CASTING TO MAKE ROOM FOR VALVES

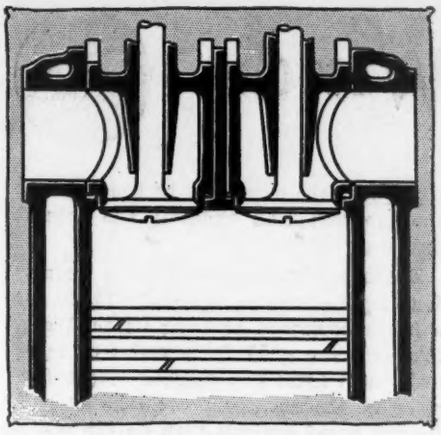


FIG. 2—VALVES IN THE HEAD

fold. First, wear, which always is conducive to noise, is reduced because a 25-pound inlet spring is used instead of the heavier 50-pound exhaust spring. Also the aspirating effect of the gas helps open the valve. Second, the valve in the head must be mounted in a cage and it is considered poor practice to construct exhaust valves in this manner. The reason for this is that a cage cannot be joined with the adjacent water-cooled wall in such a manner as to conduct the heat away as easily as when the seat is directly water-cooled. With the additional heat of the exhaust gases both cage and valve are liable to warp. Such is not the case with an inlet valve so placed. Here the gases aid in keeping the valve cooled and, further, only the inside of the valve is ever exposed to the direct heat of the gases. The cage on the other hand never is exposed to heat as when the valve is open the hot gases are out of the cylinder. The exhaust in this case is located in the side where it can have an integral waterjacketed seat which is no more liable to warp than in any of the other more usual constructions. Further the size of the exhaust valve is not limited by the necessity of keeping it from warping as it would if mounted in a cage.

Especially in the en bloc type of motor this valve distribution is of advantage. With the cylinders so close together, compactness being one of the features desired, adequate valves cannot be used if they are put in side by side. Fig. 4 is an outline of the usual construction. Compare this with Fig. 6 in which the valves are placed the inlet in the head and the exhaust at one side. Some other methods which are used to accomplish this result are shown, but they all lengthen the motor materially. One is to lengthen the valve chamber beyond the cylinders, Fig. 5, or another to separate the cylinders more widely as in Fig. 7. This, however, does not take full advantage of the en bloc construction. On one make of car, by using an attached cylinder head over the four cylinders and no covers over the valves, larger valves may be put in the same space. Laurin Klement accomplished the same result by having only a single valve cap over each pair of valves, Fig. 8.

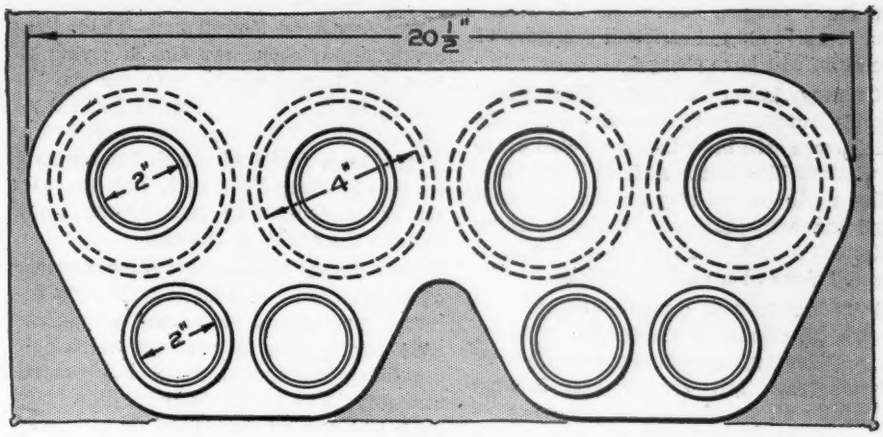


FIG. 6—INLET VALVE IN CYLINDER HEAD, EXHAUSTS IN OFFSETS

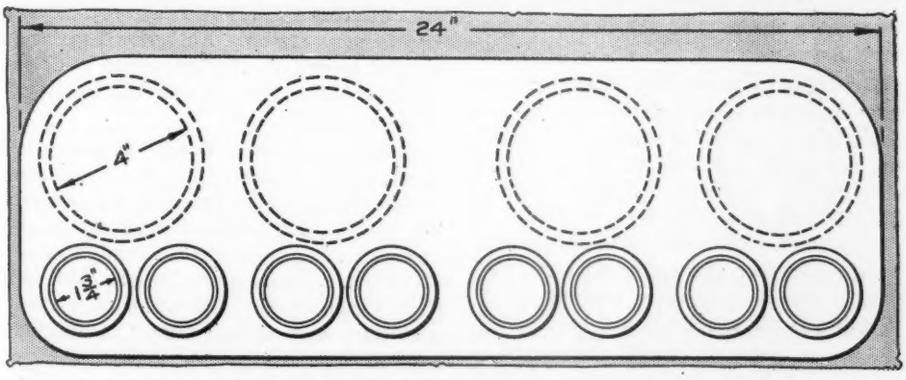


FIG. 7—CYLINDERS SEPARATED TO MAKE ROOM FOR VALVES

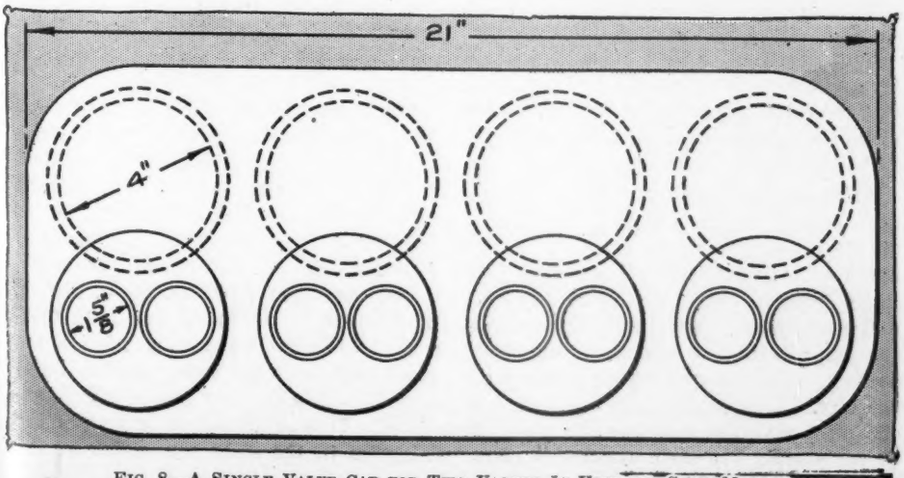


FIG. 8—A SINGLE VALVE CAP FOR TWO VALVES IS USED ON SOME MOTORS

It will be noticed that on all of these motors only one camshaft is employed. Another feature of Fig. 6 is the separation of the exhaust valve chambers so that each contains two valves. As this is usually the hottest part of the cylinders, more expansion takes place than at other points. With this construction expansion takes place with less effect than if the chamber were continuous. To give space for push rods is another reason.

Altogether, of all the types in use the writer would advocate the inlet in the head and the exhaust at the side because it does not increase the length of the motor nor restrict the size of the valves which ought to be at least equal to half the bore of the motor. As second best, the type with valves all on one side and not too restricted in diameter would be the choice, although the tee form is fully its equal. Last of all, the valves in the head give one of the most satisfactory motors theoretically but not practically.

Before closing, the Franklin concentric valve must be mentioned. The fact that it works so successfully must be attributed to the material and workmanship which is used in the Franklin motors and not to that peculiar construction. In opening the inlet valve on this motor not only the inlet valve spring, but the exhaust valve spring in addition must be compressed. —Chalmers Motor Car Co.—Lee Anderson.

CLIMB on Paved Hill—The first annual hill-climb at Paris, Ill., may 11 will have six classes. The hill is about 2,300 feet long and is paved. It is in the city limits.

Will Drive Benz Racers—Hemery, Hanriot and Bruce-Brown will drive the three Benz cars which have been entered in the American grand prix race which has been set for October 15 on the Long Island motor parkway.

Regal Plugger Busy—The Regal Plugger, which now is taking part in its around the circle tour of 5,000 miles, was in Philadelphia last week participating in the roadability run to Atlantic City. The car now is headed to the west, traversing many of the roads it passed over a year ago on its run from New York to San Francisco.

Paper For Grand Rapids Club—The Grand Rapids Automobile Club, of Grand Rapids, Mich., is about to inaugurate the publication of a monthly bulletin for the exclusive benefit of local owners. Plans for the first issue already are under way. The idea is to get out a small folder containing notes and news of interest to club members.

Club Criticizes New Law—There are some sections of the new Swann motor vehicle law which are not pleasing to the members of the Automobile Club of Maryland. As a result of this the club has decided to have 5,000 copies of the law printed and distributed among the motorists of Maryland, with footnotes showing the features which the club considers as objectionable to the motorists of the state.

Selects July Date—The annual Tribune reliability run, under the auspices of the Minneapolis Automobile Club, will be held in July. A 3-day run probably will be decided upon and the first day's run will take the tourists to the southern part of Minnesota, while the second day's run will include Sandstone, which is half way to Duluth. The third day may find the contestants wending their way toward the western part of the state. The objective point of the tour has not been decided upon.

Parkways Repaired—The repairs on the parkways of Buffalo have been completed. There are about 17 miles of parkways in the city and heretofore they were repaired with crushed stone, but a protest was made and this year gravel was used. The motorists of Buffalo naturally are much elated at this change, as gravel is by far easier on the tires than crushed stone. For some time past now the parkways of Buffalo have been sprinkled with oil and it has been found very effective and far superior to water. As a result, it is said, many of the roads are in better condition. While oil is more expensive, the results seem to justify the expenditure.

Aurora Wants Wheel Tax—The advisability of a wheel tax is being considered by the Aurora, Ill., city council, with the indications that a $2 fee will be adopted.

Portland Has New Offices—The Portland Automobile Club of Portland, Ore., has established new offices in the lobby of the Hotel Oregon, and Clifford C. Harrison, recently elected assistant secretary of the club, will have charge.

Country Home in Sight—The Grand Rapids Automobile Club of Grand Rapids, Mich., soon will have the finest club house in western Michigan. A farm located 4½ miles north of the city on the Plainfield road has been purchased, the price being $10,000. A club house and garage will be erected there at a cost of $10,000.

President Hunter Resigns—Owing to ill health, H. Chadwick Hunter has resigned as president of the Automobile Club of Washington. Mr. Hunter has labored faithfully in behalf of the motorists of the national capital, and his resignation as president of the club has caused keen regret. His successor will be elected next week at a meeting of the board of governors.

Kentucky Profits—With $25,000 a year now coming into the state treasury, and a gradually increasing amount from now on, through the passage at the recent session of the legislature of the motor tax bill, Kentucky can afford to be partial to the industry. This bill has been approved by the governor and becomes effective 90 days after its passage. Senator G. T. Wyatt was the author of the bill.

Detroit's Exposition—One section of the industrial exposition, to be held in Detroit June 20 to July 6, will be devoted to the motor cars and accessories manufactured in that city. The ground floor of the Wayne pavilion has been set aside as the transportation department of the exposition and by a unique arrangement the aisles of the temporary adjoining buildings will extend through the motor car group.

After a Country Home—A plan is on foot among the members of the Automobile Club of Hartford, Conn., to establish a country home near Unionville. One large dwelling house has been looked to and is regarded as an ideal equipment for the purpose. The proposed country club house is within easy running distance of the city. It is proposed to inaugurate a stock company and circulate the stock at $1 per share. The state association plans an all-Connecticut field day and it is quite likely that the event will be conducted at the proposed club house if the present deal goes through.

Beach in Washington—Pacific county, Washington, has appropriated $15,000 for a beach boulevard at Long Beach, Wash. Prospects are good for a series of races to be held there this summer. No better place in the northwest could be secured for the speed contests than on the ocean beach, where there is a straightaway stretch 60 miles in length.

Hoosiers After Lowell Cup—The Indianapolis Motor Speedway Co. is trying to land the Lowell trophy race for the Indianapolis course this year, to be held on Labor day. This year the Lowell promoters have forfeited the September date to the Indianapolis course, and for this reason the speedway management hopes to take the event to Indiana.

Ohio Road Maps—State Commissioner of Highways J. C. Wonders of Ohio deserves great credit for issuing a complete road map of Ohio by counties, which now are being distributed under the general assembly. The maps, which are on a large scale and one on each page of the book, are brought right up to date by the county engineers. The first edition consists of 2,000 and the demand from motorists is very strong. Authority has been secured to publish another edition of 5,000 in color indicating the different kinds of roads in the state.

Goodrich Making Roads—The B. F. Goodrich Co., Akron, Ohio, has started a campaign for the benefit of the tourist. On April 22 the company started a road-marker. For the present the roads around Cleveland, Akron and Canton will be plainly marked, and the road-marker then will start east from Chicago to Buffalo and through Albany en route to New York. From New York the main traveled boulevards leading up the Hudson to Boston, and thence through New York and around Long Island, south to Philadelphia, and then west along the national highway, will be marked by signs.

Wisconsin Election—The Wisconsin Valley Automobile Association, with headquarters at Wausau, Wis., and a membership of ninety-two, elected these officers at the annual meeting: President, Dr. A. W. Trevitt; vice-president, John Manser; secretary, G. N. Heinemann; treasurer, G. W. Sexsmith; directors, M. C. Ewing, H. G. Flieth, D. J. Murray and Judd Alexander. Good roads and elimination of the speed maniac were two purposes dwelt upon. Twenty-five new members were admitted. It was decided to entertain the delegates to the state convention of the United Commercial Travelers at Wausau

June 2 to 4 with a motor parade and tour. The association is in good financial condition.

More Macadam for Ohio—Arrangements have been made for the construction of 7 miles of macadam highway in Perry and Sharon townships, Franklin county, Ohio. A part of the state aid will be used on the roads to be improved. It is recommended that a large part of the state aid given to Franklin county should be used on the Winchester pike, southeast of Columbus.

Friendly Corporation—The United States Steel Corporation has signified its willingness to give all the road material that can be used for a long time in Ohio. Representative Edwards, of Cuyahoga county, has introduced a resolution in the house of representatives directing the highway department to get into correspondence with the officials of the United States Steel Corporation relative to the use of slag on highways. All it will cost the state is the expense of transportation.

Good Scheme—The South Bend Tribune has inaugurated a new plan for the benefit of the motorists of that city. Many desire to make runs into the country and get dinner or supper at a farm house where they can get a good country meal. To aid the tourists in this matter the Tribune intends to prepare a list of all farmers who care to serve meals to parties of this kind, with all other information that may be desired, such as location of residence of the farmer, rural route address, telephone, etc.

Governor May Enter—The second annual reliability run of the Minnesota State Automobile Association will go this year to Aberdeen, S. D., and the pathfinder will start over the route May 9. The main trophy, that offered by the St. Paul Dispatch, is now in possession of the Minneapolis club and will be competed for again this year. There are thus far twenty-seven actual entries and fully fifteen more who have declared their intentions. Governor Eberhart may enter the Little Glidden, as it is called, inasmuch as it has for its object the improvement of roads, of which he is an ardent booster.

Another Wisconsin Club—The Grant County Automobile Association was organized last week at Platteville, Wis., and a permanent organization will be effected at another meeting on May 10, at which time at least seventy-five charter members will be enrolled, the promoters claim. O. A. Eastman of Platteville was elected temporary chairman and W. T. Hurd secretary and treasurer. It has been practically decided to increase the scope of the association and name it the Southwestern Wisconsin Automobile Association. Galena, Ill., was granted permission to become a part of the association's territory. The field includes approximately all of the great southwestern Wisconsin lead and zinc fields. The purposes of the organization are: Good roads, sign boards and better relations between motorists and public.

Hill-Climb Abandoned—The Automobile Club of Bridgeport, Bridgeport, Conn., has postponed indefinitely its annual hill-climbing contest which was set for May 30. A resident of Easton, where the climb is held, objected to the contest and fearing a possible injunction the club called the affair off.

Bloomington's Officers—Officers elected by the Bloomington Automobile Club of Bloomington, Ill., are: W. D. Snow, president; George Freese, vice-president, and W. L. Martin, secretary. Leslie Veide was elected road captain and J. L. Murray, David Stevick, Floyd Iseminger, W. K. Bracken and John A. Beck were elected directors.

Sets Date for Opening—The Automobile Club of Detroit has decided on May 15 as the date of the formal opening of its club house at Pine Lake and will celebrate the affair with a social gathering. The club recently held its adjourned election of officers, the directors having been named at a prior session. The result was the choice of Frank H. Welden, president; Arthur Pack, vice-president; Sherman L. Depew, secretary, and Cullen Brown, treasurer.

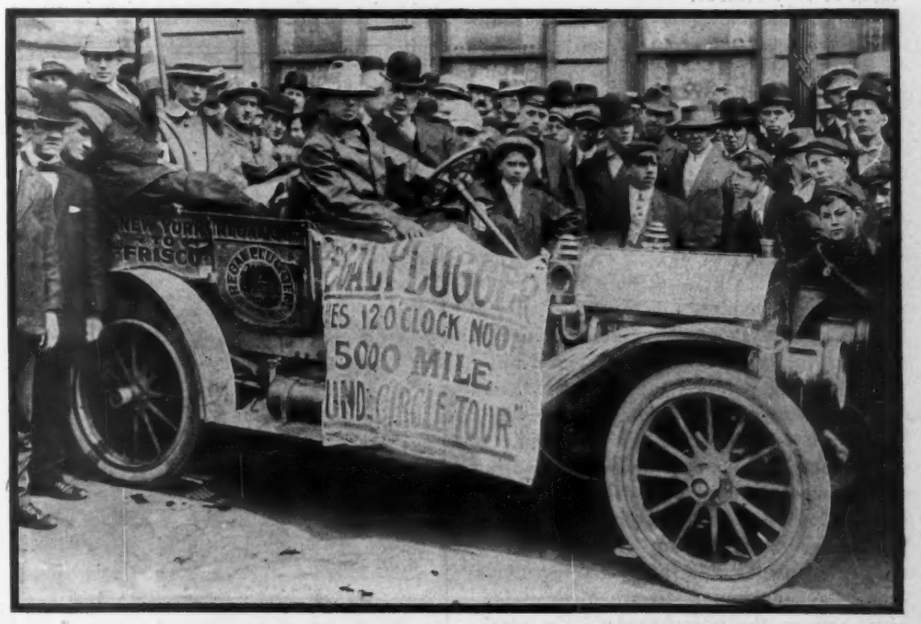
Fisher Starts Something—Carl G. Fisher has launched a movement in Indianapolis to organize a motor club of 1,000 members, the association being for pleasure only, and to include tradesmen and private owners in its membership. On condition that 1,000 or more members pay a membership fee of $15 each, Mr. Fisher proposes to build a club house at the Indianapolis motor speedway, permit the use of the speedway for a pleasure course and also give each member admission to the 8 days of aviation events this season. A committee consisting of Fred I. Willis, A. R. Kling, T. E. Hibben, Frank Staley and Charles A. Bookwalter has been appointed to formulate plans for the club.

Abandons Orphans' Day—The members of the Automobile Club of Maryland have decided to abandon the annual orphans' day outing this year. They claim that the expense has caused them to take this action.

Practical Enthusiasm—Motorists of Nortonville, Kas., believe in works as well as words when it comes to good roads. They have subscribed $250 to hire a man to drag all the roads leading from the city for a distance of 5 miles out of town. His contract calls for the use of the drags on the roads immediately after each rain. Approaches to bridges and culverts will also be kept in repair.

Will Use Traffic Rules—Grand Rapids, Mich., is likely to adopt a modification of the Bingham traffic rules of New York. Police Commissioner J. R. Jackson has studied conditions in New York and in Detroit where a modification of the same set of rules is being enforced and is busy preparing a plan which he hopes to be able to work out in Grand Rapids. It is his idea to send members of the traffic squad of the police department to Detroit to study conditions there.

Crusade in Cleveland—Cleveland motorists to the number of fifty-five have been arrested in the crusade of the police against scorchers and against those violating minor motor regulations. Some of the city's most prominent citizens have been caught in the crusade. Those arrested plead guilty in most cases and are fined $10 and costs. The mayor will ask the council to pass an ordinance requiring motorists running behind street cars to come to a stop when the street car does and forbidding a driver to pass a street car which is standing still. Local motorists are preparing to fight this ordinance.



REGAL PLUGGER WHICH IS ON 5,000-MILE ROUND-THE-CIRCLE TOUR

The Motor Car Repair Shop

Hints for the Amateur

IT is the claim of some magneto manufacturers that if the repairmen, drivers and owners of cars would leave the magnetos alone, there would be no magneto troubles. This is rather a rash claim; for although it is a well-known fact that many, and perhaps the greater part of the more serious troubles to which the magneto is subject, are brought about or caused through ignorant or unskilled manipulation, it is also a well-known fact that no mechanical mechanism is perfect. Every magneto is subject to wear, and this wear is reduced in proportion to the skill and care of the operator in whose hands it falls. When the moving parts of a magneto become worn either new parts must become fitted or the necessary adjustments made. The skilled operator does not wait until the magneto fails to give satisfactory service before he gives it his attention, but he treats the magneto just as he does the other features of his car—he oils it regularly and he inspects it regularly to see if there are any loose bolts or connections, or to see if it needs cleaning or adjustment.

It is true that magnetos have often been tampered with when the trouble really existed in the carbureter, and vice versa; but still the inspection of a magneto will never do it any harm if this inspection is properly made, and it is the endeavor of Motor Age in the articles that appear in these columns from time to time relative to magneto troubles, to educate those into whose hands the magneto falls into the features of those parts of the various magnetos in use, which are liable under certain conditions to require adjustment or replacement.

In the center of Fig. 1 the circuit-breaker which is located at the lower rear portion of the Bosch magneto is illustrated. It consists of a bell crank B, pivoted at the point O, and a block L, both of which revolve as indicated by the arrow. At either side of the case containing the circuit-breaker there are two fiber rollers R covered by steel plates which may be removed by taking out the screws that fit into the holes H. As this circuit-breaking mechanism revolves, the lever B passes over each of the rollers R once in every revolution. As it passes over a roller the platinum points P are separated, and it is the separation of these points which causes the spark at the ignition plug. It sometimes happens that owing to misfiring of the motor caused by a defective spark plug, a loose terminal, water or dirt in the carbureter or something of that sort, a driver or owner will after having made what he considers a thorough investigation, change the adjustment of the platinum points P without any reason for so doing. Finding at last that he is unable to eliminate his troubles he takes the magneto to the repairman and another investigation ensues. If this repairman were to abide by the instructions of some magneto manufacturers he would leave the magneto alone, and after having corrected all other possible faults and satisfied himself that there was trouble in the magneto, then remove the magneto from the motor and send it back to the manufacturer for repairs. The manufacturer will make a thorough examination, will find nothing wrong but the adjustment of the platinum points P and rectifying this, will return the magneto. If the repairman had known a few of the characteristic troubles of the magneto, of which this is one, he might have investigated, found and corrected the poor adjustment; earned 50 cents for his firm, and saved the owner a possible $2 in express charges, and the loss of his car for several days.

Perhaps the manufacturer figures that it is best if the repairman does not attempt to repair or adjust the magneto and sends it to the factory instead. This reasoning is good inasmuch as it is assured that the proper repairs and adjustments will be made; but it is not good for the reason that the cost to the owner is much greater than it should be, and the reputation of the manufacturer of the instrument is injured to that extent.

The inspection of a circuit-breaker of a magneto of the type illustrated consists in merely seeing that the platinum points P are clean and unburned and that they separate the required distance which is about $\frac{3}{32}$ inch. To facilitate the inspection and adjustment of the platinum points the Bosch company furnishes with each magneto a wrench with a gauge attached to it which is used in testing as shown in the upper portion of Fig. 1; the blade E of the wrench W being inserted between the platinum points when the maximum point of separation is obtained. In using this wrench the magneto should be turned over slowly until the arm A of the contact lever is on the crest of the roller R when the platinum points should be at the maximum point of separation. An effort should then be made to insert the blade E of the wrench. If it will not go in the nut N should be loosened with one end of the wrench then the screw T turned up or down until the distance between the platinum points is such that the blade just slides freely between them. The nut T should then be held securely in this position and the nut N drawn up to lock the adjustment.

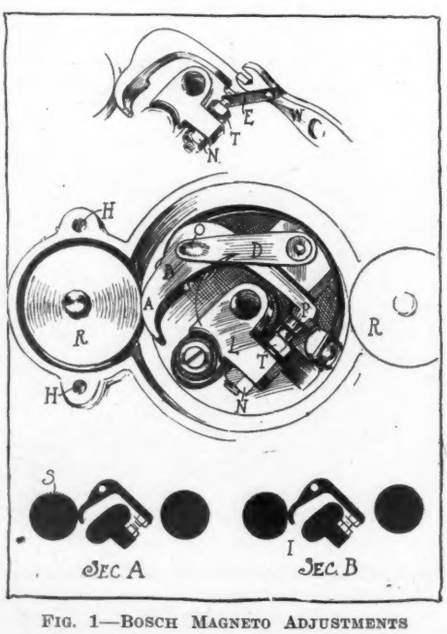
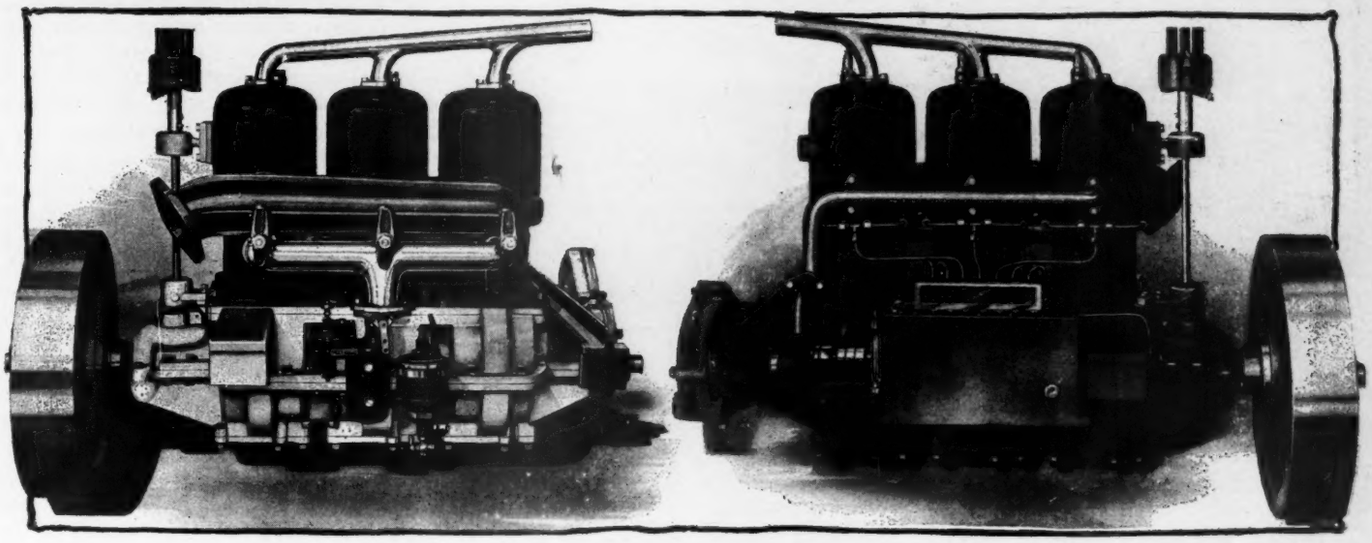


FIG. 1—BOSCH MAGNETO ADJUSTMENTS

It sometimes happens, although very rarely, that one or both of the rollers R will become swollen from atmospheric conditions or otherwise so that they will tighten up on the shafts on which they revolve and fail to turn. The arm A will then slide over a certain portion of the roller and if continued unnoticed for any great length of time it will become worn as indicated at I in section B of the lower illustration, Fig. 1. As a result of this when the roller becomes so worn that the platinum points do not separate sufficiently the motor will begin to miss and perhaps fail to fire entirely. Then again it is possible that if a roller is caused to stick from atmospheric condition and becomes worn a change in the weather may render it free again, but the worn surface will remain as indicated by the dotted lines S in section A at the lower portion of Fig. 1. Such a condition would cause an intermittent misfiring. To complete an inspection, therefore of this portion of the magneto it is necessary to remove the plates which cover the rollers and see if the rollers revolve freely and are not out of round. It must be borne in mind by the repairman that if ever trouble should occur with the roller that would require its replacement care should be taken that the new roller is of the same size as the one on the opposite side of the circuit-breaker box. Should it be necessary or desirable to dress down or inspect the platinum points P the circuit-breaker arm B can be removed by swinging over the blade D till it is clear of the arm B and then drawing the arm off of its pivot O. The other contact point may then be removed by taking off the nut N and unscrewing T until it is disengaged from the block L.

Development Briefs



BOTH SIDES OF WISCONSIN THREE-CYLINDER, TWO-CYCLE MOTORS

Wisconsin Two-Cycle Motors

THE Wisconsin Machinery and Mfg. Co., Milwaukee, Wis., has listed for 1911 trade three sizes of its valveless two-cycle motor: a two-cylinder type, a three-cylinder, and a four-cylinder type, all made with 4½-inch bore and stroke. These motors are of the three-port type and use a deflector cast integral with the piston top, this deflector being for the purpose of directing the flow of intake gases. This deflector is of the diametral face type with the corners rounded against the cylinder wall. The deflector and piston top are hand finished by filing, scraping, and polishing with emery cloth in the hope of avoiding preignition. As in practically all two-cycle motors the cylinders are separate castings with integral waterjackets, water circulation being maintained through the jackets on the radiator by gear pump. The crankcase is 90 per cent aluminum alloy. The exhaust port of each cylinder is ¾ inch above the low piston position; and the top line of the third or transfer port is $\frac{7}{16}$ inch above low piston position. The intake port is $\frac{7}{16}$ inch open when the piston has reached its highest point. The compression space has arched top and the motors are designed for 65 pounds compression.

Pistons are of the same grade of cast iron as used in the cylinder castings; the crankshafts are open-hearth steel with four bearings on the three-cylinder type, and five on the four-cylinder design. Connecting rods are steel dropped forgings of I section and attached to the pistons through hardened and ground wristpins 1⅛ inch in diameter. In the four-cylinder car the two front crankpins are 180 degrees apart, and in the two rear pins 180 degrees apart, but the rear pair is set 90 degrees behind the front pair. The firing order is 1, 3, 2, 4. The flywheel is bolted to a crankshaft flange and is designed for cone clutch.

The lubrication of these two-cycle motors is by a mechanical oiler of the valveless double-plunger type, which forces oil to the different parts. This oiler is located on the left side of the crankcase. Splash lubrication is maintained within the crankcase. In order to oil the wristpins a hole is drilled throughout the length of each, and through this the oil from cylinder oilers is utilized. The motor gears are inclosed in an oil and dust-tight case which is integral with the crankcase.

A double ignition system is fitted on the four-cylinder motor, there being two spark plugs in each cylinder, one plug wired to the Bosch high-tension magneto, and one to the coil system. On the three-cylinder motor an Atwater-Kent unisparker system is used.

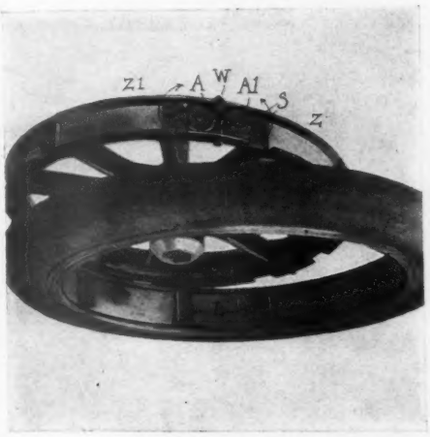


FIG. 1—BOOTH DEMOUNTABLE RIM

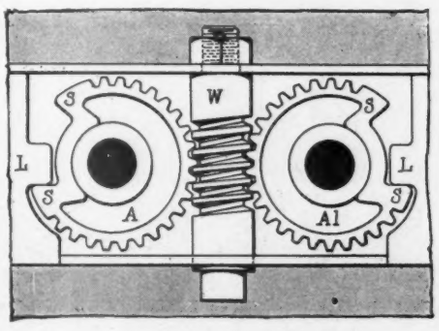


FIG. 2—BOOTH RIM FASTENER

Booth Demountable Rim

The Booth Demountable Rim Co., Cleveland, O., manufactures a demountable rim which is somewhat out of the ordinary in that it requires but three turns of an elbow wrench to secure the attachment of the demountable rim on a wheel and three turns of this wrench are sufficient to remove the demountable rim. This rim is unique in that the wrench movement either forces the rim on or withdraws it from the felloe. Its general action is shown in Fig. 1, in which A and A1 are toothed wheels each in mesh with the worm W. The teeth on each wheel are cut away for practically one-quarter of the circumference, forming two shoulders S which engage with lugs L on the demountable rim, so that when the rim is pushed in place on the felloe, turning of the worm rotates the wheels A and A1 so that they engage in these lugs binding the demountable in place. A rotation of the wheels is in direction of the arrows Z and Z1 when attaching a demountable, and in the opposite direction when removing it. A plan diagram is shown in Fig. 2, in which the wheels A and A1 are shown with the shoulders S engaging the lugs L, so that the demountable rim is anchored into position on the felloe as is illustrated.

Among the Makers

NEW PLANT OF THE EXCELSIOR SUPPLY CO. OF CHICAGO

MORE Pullman Capital—The capital of the Pullman Motor Car Co. was increased April 30 from $100,000 to $500,000.

Boynton Changes—Chester C. Boynton, for several years purchasing agent of the Excelsior Supply Co., has been made general manager for A. R. Mosler.

Myers in Decatur—H. W. Myers, formerly with the Zimmerman Mfg. Co., has identified himself with the Decatur Motor Car Co., of Decatur, Ind., instead of the Randal Motor Car Co., of Fort Wayne, as stated in a recent issue of Motor Age.

Kinsey Adding to Plant—The Kinsey Mfg. Co. of Toledo announces that the contract has already been let for the erection of a three-story plant on Yost street, adjoining the Overland factory. The new plant will have double the floor space now occupied and will be thoroughly modern. The main structure will be 300 feet by 100 feet with an L 75 feet by 65 feet, which also will be three stories high. A large amount of machinery for the new building, which will be pushed to rapid completion. The concern manufactures frames, radiators, hoods, oilers, mufflers and other parts, and a large amount of its product is taken by the Willys-Overland company.

New York Dealers' Strength—At the last regular meeting of the board of directors of the New York Automobile Trade Association, Rothschild & Co., Fisk Rubber Co., Thedford Auto Garage, and the Correja Motor Car Co., were elected to membership. The election of these four firms brings the total membership of this association up to seventy-five members, which is by far the largest of its history. One of the most predominating features of the organization now is the garage contingent, which numbers among its constituency some thirty-five of the largest and most representative garages operating in Greater New York. The fact of the association having in its ranks this garage strength has caused the major portion of those interested in the promotion of a proposed exclusive garage association to abandon the idea, and affiliate with the trade association.

Gibneys Invade New York—James L. Gibney & Brother of Philadelphia will invade New York with a new tire and accessory store to be conducted at 248-50-52 West Fifty-fourth street. Walter A. Schott will be in charge.

Adds to Speedometer Plant—The Stewart & Clark Mfg. Co., of Chicago is engaged in building an addition on its speedometer plant. This addition has 110 feet frontage, 125 feet depth, and consists of two stories and a basement, making a total floor area of 40,000 square feet. Excavation work already has begun and it is expected the building will be completed and machinery running by July 4.

NEW STORE OF GIBNEY BROTHERS, NEW YORK

Baron in Charge—Baron Van der Noot de Vrekem de Moorsel, well known in Detroit as a member of the Belgium consulate, will sail for Brussels May 10, where he will represent the Krit Motor Car Co. of Detroit, which will show two cars at the Brussels exposition.

New Warren Plant—The new plant of the Warren Motor Car Co. is now in course of construction at Holden avenue and the railroad crossing, Detroit. The first of the new buildings, 600 by 60 feet, will be finished inside of 60 days. Following close on its heels the second building, 400 by 600 feet, to be used as a painting and finishing shop, is scheduled for completion September 1. The third building, which will be used as an assembling shop, will be ready January 1.

Lamp Plant for Toledo—Plans have been completed and the contracts will soon be awarded for the erection of a new plant for the Castle Lamp Co., which will be removed from Amesbury, Mass. to Toledo this summer. The new building will be 351 feet by 136 feet, and of brick, steel and concrete construction. It will cost about $100,000, and must be completed by July 1, at which time the company will open the plant. Five hundred men will be given employment.

Big Overland Demonstration—The Overland Automobile Co. gave the 2,000 or more employes of its Overland and Marion plants in Indianapolis a half holiday last Friday afternoon, and the event was marked by the largest street parade ever made up of the employes of any one company. Following the parade the employes were entertained at the baseball park where Indianapolis played against Toledo. During the evening Mr. Sourbier entertained officials of the company, city officials, and factory employes with a theater party. Employes were paid full time while they were off duty and were given admission tickets to the baseball game, the company having reserved 2,000 seats.

Has Handsome Store—The combination of art and trade never was more beautifully exemplified than in the salesroom of the Consolidated Motor Car Co., of San Francisco, northern California distributer of the Pope-Hartford. The walls to a height of about 10 feet are of concrete. Above this there is a series of frescoed panels, each depicting some feature of a great motor race. The ceiling rises in the shape of a very flattened out V, and a network of stained beams appear overhead. Suspended are great chandeliers, in the design of which there is suggested a motor car wheel. Along the walls of the salesroom are a number of additional electric fixtures of artistic design. Across one end of the salesroom are the offices. These are closed off by partitions of leaded glass, further

enhancing the general beauty of the place. Behind these, shut off by a heavy fire wall, are the shops and stock rooms of the company.

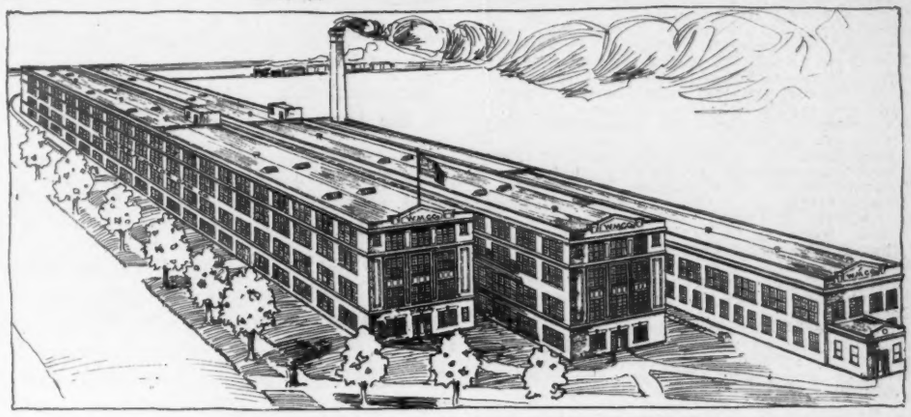
More Room for Elmore—A large new factory building will be erected in the near future by the Elmore Automobile Co. at Clyde, Ohio. A tract containing 60 acres of land was purchased at sheriff's sale this week by B. A. Becker, to be used as a factory site.

Ford's Big Output—The official figures from the Ford Motor Co. for shipment of cars show that 1,035 completed machines were built and shipped out during the 5½ days from April 18 to 23—Saturday being a half day at the Ford factory. This gives an actual average figure of 188 cars shipped per day. Before the moving of the Ford company to its new factory, the record shipment was 110 cars in a single day from the old plant at Piquette and Beaubien streets.

Are Fighting Garages—A resolution has been introduced in the board of aldermen of Buffalo, N. Y., to restrict the building of garages. Citizens of Buffalo have from time to time been annoyed by the promiscuous building of garages in various parts of the city. This resolution or ordinance proposes to restrict the persons interested in garages from building them without first receiving a permit from the common council. The mayor also will have permission to revoke any and all licenses under the ordinance. It seems likely that the measure will be passed.

New Excelsior Plant—The Excelsior Supply Co., of Chicago, has taken possession of its new plant in the Kelly-Maus building, a seven-story structure extending from Randolph to Lake street, on the west bank of the river. The building is 70 feet wide and over 400 feet in length, and is so constructed that the basement floor is at the ground level, permitting a loading track to run into the basement so that the freight cars may be loaded under cover. The factory being on the bank of the river, another method of transporting goods is furnished by means of a lighter which connects the new factory at Twenty-second and Union streets and the Excelsior company's sales department. The Chicago, Milwaukee and St. Paul tracks run alongside of the building on the west.

and Dealers



PLANT OF THE WARREN MOTOR CAR CO. OF DETROIT

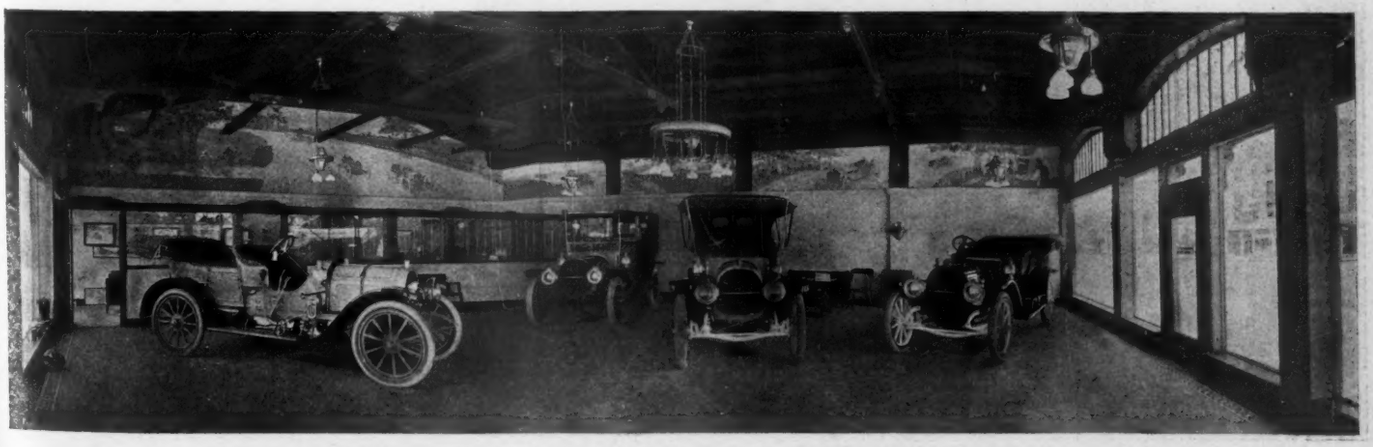
Holsman at Plano Plant—The Independent Harvester Co. at Plano, Ill., has secured the services of Henry K. Holsman as consulting engineer. Mr. Holsman formerly was president and engineer of the Holsman Automobile Co. and is known as the pioneer of the high-wheel type of motor cars. The company is manufacturing at the Plano factory a line of cars under the Holsman patents suitable for farm and country and for doctor and livery service.

Boston Remembers—Secretary Chester I. Campbell of the Boston Automobile Dealers' Association is making plans for an outing of blind and crippled children this year which will surpass any previous ones. Last Saturday he sent out letters to more than 2,000 owners of motor cars asking their co-operation in the matter. He also sent letters to all the dealers asking them to get in touch with their customers to secure cars. In other years the outing was confined to the children in the Perkins Institute for the Blind and the dealers provided the cars, but the number was limited to about 100. This year Mr. Campbell expects to take care of about 800 and he wants to get about 200 machines if possible. The date selected is June 8 and the outing will be held at Sharon.

Was a Quarterly Dividend—The dividend declared by the Johnson Service Co., of Milwaukee, was a quarterly dividend instead of a yearly one. The Johnson Service Co. claims it never has paid less than 7 per cent annual dividend for the last 25 years.

Moves Into New Branch—The G & J Tire Co. has taken possession of its new quarters at 1924 Broadway, New York city, and has discontinued the branch at 10 West Sixtieth street. Marcus Allen has accepted the appointment as manager of the branch.

Will Sell Power Wagons—Articles of incorporation for the Radle-Clark Sales Co. of Detroit, with a capital stock of $50,000, has been filed. This company is closely allied with the Clark Power Wagon Co. of Lansing, Mich., Mr. Clark being president and Mr. Radle treasurer of both companies. The Radle-Clark Co. has contracted for the entire product of the Clark Power Wagon Co. for a period of 10 years. The sales organization are now occupying rooms in the Majestic building, Detroit.



INTERIOR OF SALESROOM OF CONSOLIDATED MOTOR CAR CO. OF SAN FRANCISCO, POPE-HARTFORD AGENT

Recent Incorporations

Bronxville, N. Y.—General Garage Co., capital stock $60,000; to rent, store and deal in motor cars, etc. Incorporators, A. H. Johnson, E. E. Beyer and H. A. Remis.

Jersey City, N. J.—Funk Mfg. Co., capital stock $125,000; to manufacture and deal in machinery and motor car accessories. Incorporators, Frederick C. Lang, Archibald S. Alexander and J. W. Rufus Besson.

New York—Garage Equipment Co., capital stock $20,000; general machine-shop work, build and repair buildings, garages, etc. Incorporators, Samuel M. Hodkinson and Emma W. Hodkinson.

New York—A. J. Myers, Inc., capital stock $25,000; to manufacture and deal in carbureters, motor car and motor boat supplies. Incorporators, A. J. Myers, Hugo S. Radt and Martin B. Cohn.

New York—Automobile Sales and Distributing Co., capital stock $10,000; to manufacture and deal in motor car parts and accessories, etc. Incorporators, Owen B. Augspurger, George A. Orr and George J. Cochrane.

New York—Apthorp Garage Co., capital stock $10,000; to manufacture, deal in and rent motor cars, etc. Incorporators, Samuel Marion, Roger M. Drury and William Rekersdress.

Brief Business

Philadelphia, Pa.—The Fegley Tire Chain Co. has been incorporated. Capital $5,000.

Colfax, Ill.—Charles E. Arnold is erecting a concrete block building 40 by 80 feet for garage purposes.

Pittsburg, Pa.—The Pittsburg Automobile Equipment Co. has leased another big store room on Baum street, East End.

Cordele, Ga.—I. M. Powell has purchased a lot between the Central hotel and the opera house and will erect a two-story garage of brick 75 by 100 to cost $10,000.

Newark, N. J.—The Taxi-Service Co. has been organized to operate motor cars for rent and hire. The capital is $50,000, of which $1,000 is paid in. The registered office is at 765 Broad street. The incorporators are Francis Child, Jr., and Edgar Bross of this city, and Margaret McCallig of East Orange.

Bridgeton, N. J.—The Hann Automobile Co. has been granted a charter. Capital $50,000.

Pittsburg, Pa.—The Pullman car is located at 6113 Centre avenue, East End. J. E. Graham is manager.

Kansas City, Mo.—The Republic Tire Co. with D. M. Graham, Jr., manager, has opened a branch at 517 East Fifteenth street.

Gothenburg, Neb.—Otto Wiederanders and Peter C. Benson of Cozad have purchased the garage of the Kearney Automobile Co.

New York—The Oldsmobile Co. of New York, has opened new salesrooms at 1655 Broadway, making its metropolitan headquarters twice as large.

Peoria, Ill.—The Gipps Brewing Co. has erected a garage at a cost of $1,500 and will experiment in the use of motor trucks exclusively for delivery purposes.

Minneapolis, Minn.—Harry E. Pence, of the Pence Automobile Co., has purchased a large tract of land on which he will build a temporary structure to be used for warehouse purposes.

Boston, Mass.—The Waite-Robbins Co. has been formed in Boston to handle the Babcock electric and the Sterling motor truck. H. S. Waite comes from Columbus and F. R. Robbins from Chicago. They have secured salesrooms at 549 Boylston street facing Copley square.

Pittsburg, Pa.—The Pittsburg Automobile Academy has been incorporated. Capital $5,000.

Braddock, Pa.—The Pittsburg Motor Co. will erect a factory for the manufacture of cars to cost $25,000 on Corey avenue.

Trenton, N. J.—The Howard Demountable Rim Co. has moved into its new factory. H. T. Eisenberg is the local manager.

St. Louis, Mo.—The Electric Storage Battery Co. has opened a store room for Exide material at Sixteenth and Pine streets.

Pittsburg, Pa.—D. C. Ripley, of Pittsburg, has bought the plant and business of the Baldwin Automobile Co., at Connellsville, Pa.

Philadelphia, Pa.—A branch of the Swinehart Tire and Rubber Co. has been established at 1437 Vine street. D. Thomas Keenan is the manager.

Chicago—Tennant Motor Limited, agent for the Peerless and Marmon, has moved into its new building at Michigan avenue and Twenty-fifth street.

Philadelphia, Pa.—The Bergdoll Motor Car company is building a three-story addition at northwest corner of Broad and Wood streets, at a cost of $100,000.

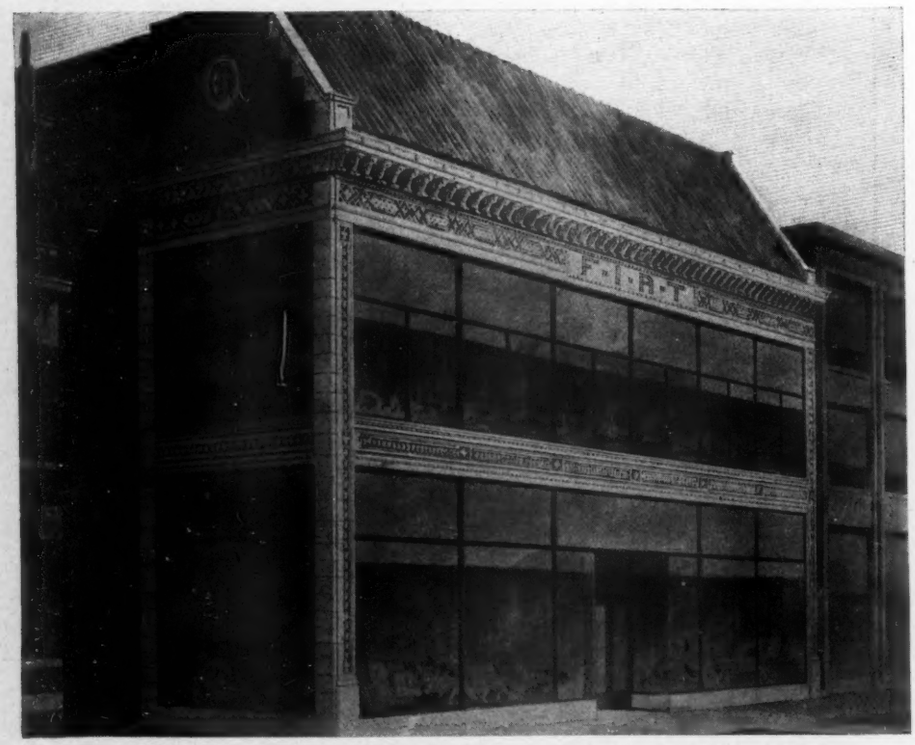
Atlanta, Ga.—Fitzsimons Motors, Inc., distributor in Georgia, Florida, South Carolina and Alabama of the E-M-F 30, has opened quarters with the Georgia Motor Car Co., 45 Auburn avenue.

Pueblo, Colo.—F. E. Stuyvesant, president of the Stuyvesant Motor Car Co. of Cleveland, O., has written the Pueblo Business Men's Association with a view of locating a car factory here.

Anderson, Ind.—The Remy Electric Co. will open a branch distributing office in Boston, Mass., within the next 2 or 3 weeks. It will carry in stock a complete supply of magnetos and parts and a line of special fittings for attaching Remy magnetos to cars not already magneto-equipped.

Connellsville, Pa.—The Connellsville Garage Co., which is composed of B. J. Clark and William Work, has bought 65 by 165 feet on East Apple avenue, as a site for a $15,000 garage. The building will hold forty cars and will have a well equipped accessory and repair department.

Buffalo, N. Y.—The Pierce-Arrow Amusement Association was recently organized by employes of the Pierce-Arrow Motor Car Co.. The purpose of the association is to promote social activity among the employes of the company. The first



NEW HOME OF CHICAGO BRANCH OF FIAT AUTOMOBILE CO.

Announcements

social was recently held in the large banquet hall of the administration building.

Chicago—The Standard Automobile Station has changed its name to the Carpenter Automobile Co.

Los Angeles, Cal.—The Wade Motor Sales Co. is moving into their new building at 1136 South Olive street.

Harrisburgh, Pa.—The Crispen Auto Co. is completing a new headquarters at 106 South Second street.

Pittsburg, Pa.—The Ford Motor Car Co. has leased a four-story brick building at 5929-31 Baum street.

Utica, N. Y.—The Ebann & Beringer Auto Co. will remove May 1 from 231 Genesee street to 12 Burnet street.

Johnstown, Pa.—The Park Automobile Co. has been organized with a capital of $25,000 by F. J. and E. L. Irwin, Bruce H. Campbell.

Wilmington, Del. — The Foss-Hughes Motor Car Co. is rebuilding a stable on Gilpin avenue with two-story front and remodeling interior to cost about $5,000.

Pittsburg, Pa.—The Pittsburg Automobile Academy, capital $5,000, has been formed by Will H. Hochberg, Verona, Pa.; Harry P. Johnston and James G. Murray, Pittsburg, Pa.

Boston, Mass.—The Boston Tire and Rubber Co. has leased the entire second floor of the building at 184 Friend street over its retail shop, where it is to conduct a general repair department.

Baltimore, Md.—Charles S. Houghton, agent in this city for the Overland car, is now located in his new quarters, Maryland avenue and Mount Royal avenue.

Cleveland, O.—S. M. How, for 2 years with the Haynes Automobile Co. as special representative, has resigned to accept the management of the sales force of the Barger Automobile Co. of this city.

Baltimore, Md.—The garage and salesrooms of the Matheson car have been established in the rear of 21 East North avenue. The car is handled by E. L. Leinback & Co.

Chicago—The Phinney Carbureter Co. has been incorporated in the state of Illinois by Albert Phinney, William Kupferer and William F. Krueger with a capital of $5,000. The headquarters of the company are in Chicago. The company will manufacture and sell carbureters.

Pittsburg, Pa.—The Reliance Motor Truck Co., of Pittsburg, capital $25,000, has received its Pennsylvania charter. Its members are H. W. McMasters and Peter K. Soffel. The company has its offices at present in the Wabash building but will shortly put up a large establishment down town where it will handle the western Pennsylvania agency.

Toledo, O.—The Toledo Auto and Garage Co. has opened salesrooms in garage on Twenty-first street.

Mishawaka, Ind.—J. Z. Wilklow of Mishawaka has commenced the erection of a one-story garage on his property adjoining the new Mishawaka hotel. The building will be 50 by 150 feet.

Detroit, Mich.—The Carhartt Automobile Corporation has leased the factory formerly occupied by the Pungs-Finch Motor Car Co. on Jefferson avenue and is using this plant as temporary headquarters pending the construction of a new factory for which the company is now in quest of a site.

Albany, N. Y.—The Maxwell-Briscoe Automobile Co. is to erect a four-story building to cost about $100,000. Work will be started next September if present plans do not miscarry. In the meantime the Lark street auditorium will be transformed into a garage and repair shop for the Maxwell-Briscoe company.

Detroit, Mich.—Alexander Byron Mohler, representing Mohler & DeGress of Mexico City, the largest dealer in motor cars in old Mexico, has been spending several days in Detroit, the guest of officers of the Hudson Co. He says there are 2,300 cars in the city of Mexico, but warns manufacturers that nothing but a sturdy car will appeal to the purchasing class there, due to the altitude, the road conditions and the amount of hill-climbing necessary to any prolonged trip.

Auburn, Ind.—The Auto Tire Re-enforcement Co. has reorganized and incorporated under the name of Double-Fabric Tire Co., of which A. L. Murray is president, and W. H. Willenar secretary and general manager. Tire re-enforcements and emergency tire repairs of various kinds will be manufactured.

Toledo, O.—Announcement is made that General C. M. Spitzer will erect a large block on Madison avenue between Tenth and Eleventh streets, Toledo. The structure will have a frontage of 200 feet on Madison avenue. It will be specially designed for motor car salesrooms, of which there will be seventeen.

New Agencies

Duluth, Minn.—Inter-State Auto Co., Regal.
New London, Wis.—Schmidt & Herres, Overland.
West Bend, Wis.—Gehl Brothers Mfg. Co., International.
Elkhorn, Wis.—F. S. Wiswell, Studebaker.
Baraboo, Wis.—A. S. Lanich, Halladay.
Green Bay, Wis.—F. J. Briquelet, Klinekar.
Worcester, Mass.—H. B. Ward, Pierce-Racine.
Columbia, S. C.—Gibbs Machinery Co., Selden.
Bloomfield, N. J.—T. T. Maxfield, Selden.
Appleton, Wis.—S. A. Whedon, Selden.
Birmingham, Ala.—Harrison Auto Co., Selden.
Houston, Tex.—Du Puy Motor Car Co., Selden.
Noank, Conn.—E. B. Searle, Selden.
New York—New York Auto Supply Co., Parry.
Silver Lake, Ore.—G. B. Warwell, Inter-State.
Portland, Ore.—Graham Motor Car Co., Regal.
Spokane, Wash.—Standard Motor Car Co., Courier.
Delaware, O.—Delaware Automobile Co., Buick.
Boston, Mass.—Warren & Howard, Whiting.

GARAGE OF THE SWEET-EDWARDS AUTOMOBILE CO. OF OMAHA

Legal Lights and Side Lights

THIS month and next several new state laws will go into effect, among them the measure enacted in Kentucky which becomes operative June 13. Virginia's new law goes into force on June 15. It is not all clear sailing, however, in Kentucky, especially in Louisville, where the motorists are raising objections to the two licenses, city and state, which they have to take out under the new order of things. The Louisville club believes the new law to be unconstitutional in some respects, and it has decided to hold a committee meeting shortly and pass upon the question. In case it is the opinion of the committee that the measure is constitutional an effort will be made to have the ordinance compelling a city license repealed.

In general, the new law pleases the majority of motorists in the Blue Grass state, the feature best liked being the reciprocity provision which permits Kentuckians to tour elsewhere without extra license fees, and which allows visitors to go into the state without having to register. In brief, the new law provides a fee of $5 for a car of less than 25 horsepower, $10 for 25 and less than 50 horsepower, and $20 for 50 horsepower or greater. These licenses are issued by the secretary of state at Frankfort, Ky. The law does not require the state to furnish the number plates. Non-residents do not have to register, provided they have taken out tags in the state of their residence, and have their cars properly numbered. A new owner has a leeway of 10 days after purchasing his car before taking out his tag. In general, the conditions imposed by Kentucky regarding numbers, lamps, etc., are conventional, and in the way of speed regulation there is a limit of 10 miles an hour in the business sections of towns or cities, 15 miles an hour in the business districts, and 20 miles in the open country. Drivers are required to come to a stop when signalled to do so by the driver of a horse-drawn rig, whose animal evidently is afraid of a motor car. All fees collected by the secretary of state under this act, go into the state treasury for the benefit of the state road fund.

Virginia's Latest Act

Virginia requires the registration of every car on the first day of January in each year. All operators, excepting the owner, or members of his immediate family, are required to register and secure a license. The application from the driver has to be sworn to, and in addition there must be statements signed by two reputable citizens that the applicant is a fit person and is competent to operate a motor car. The fee demanded for this driver's registration is $2.50, and the operator is required to display his badge at all times. Virginia issues the car registrations on the horsepower basis. For a machine of 20 horsepower or less there is a charge of $5, and from 20 and under 45, $10, and 45 or over $20, this horsepower to be determined by the rating given by the manufacturers. These fees include the number plates, which are furnished by the state.

Tourists are allowed a certain leeway in that cars carrying tags of other states may be used on the highways of Virginia not exceeding two periods in 7 consecutive days in each calendar year. There is a string to this, however, in that in case of a conviction for violations of any of the clauses of the Virginia act the guilty party must take out a Virginia license. In the way of speed limitations a car is held down to 8 miles an hour on curves or bends, or where the roadway is not plainly visible for a distance of 300 feet ahead and at the intersection of prominent cross-roads where such road or highway passes through the open country, and when passing another machine. There also is a limit of 8 miles an hour in the business sections of cities or towns, and 8 miles an hour at points on public highways where there is a gathering of horses and persons. Otherwise the rate of speed may be 20 miles an hour, except where special provisions for a reduction are made.

Clause Out of Ordinary

In one respect the Virginia act differs from the conventional in that one clause of the law demands that every car shall be provided with a lock, key or other device to prevent it being set in motion, and no person shall allow a car operated by him to stand or remain unattended in any street, avenue, road or other public place without first locking or making fast the cars as above provided. Another departure is a provision whereby any motorists violating the law shall be liable for damage if actually incurred in any accident, and in default of deposit of a sum in cash to pay for this damage, the car may be seized and impounded anywhere in any county or city of the state upon the order of the justice and may, by order of this same official, be sold to pay for the fine or damage. The justice, however, cannot adopt such harsh proceeding without first giving the owner a chance for his white alley by publishing a notice to the effect that the car is to be sold. The owner can make a defense. In case the car is sold the machine goes to the highest bidder, and if there is any surplus after the damages are paid, the owner gets it.

All fees collected by the secretary of state, after deducting the necessary expenses incident to purchasing and mailing number plates, go to the state treasury as a special fund to be expended under the direction of the state highway commissioner in the permanent improvement of the main highways of the state.

This Virginia measure also takes cognizance of the garage-keeper by imposing a fee of $15 per year on each garage in towns of fewer than 2,000 inhabitants. There is an additional sum of 50 cents per car demanded for a garage with a storage capacity in excess of five machines. In towns of more than 2,000 inhabitants the garage man pays $25 a year, and the additional tax of 50 cents for having a storage capacity for more than five cars. In cities the tax is $100 for running the garage, and $1 additional for each vehicle for the storage capacity of each machine over five. In summer resorts it is permissible for the garageman to take out a license for a 6 months' term, the fee for which will be one-half the regular rate.

Maine's Laws of Road

Maine has passed a new law covering road operations and including the registration of cars and a setting of speed limitations of motor vehicles. The registration fee in this state is most reasonable, having been set at $2 per car regardless of the horsepower of the machine. For this $2 the motorist also gets his number plate free, the license being issued by the secretary of state. Operators of cars must also register, the same $2 fee being demanded. Non-residents can go into the state, provided they carry their own state numbers. The speed limitations are set at 15 miles an hour in towns, cities and villages other than the business district. In the congested portions the limit is 8 miles an hour. The laws of the road demand that when persons traveling with teams meet each shall turn to the right of the middle of the traveled highway, and that when it is unsafe to do this the person about to be overtaken must, if requested, stop for a reasonable time at a convenient place to allow the person to pass. It is not permissible to leave a team or vehicle stationary on a road so as to obstruct the free passage of other vehicles, and a horse-drawn rig cannot be left without a driver. There are some towns in the state which are allowed to place restriction of motor traffic, and in the towns of Eden, Mount Desert, Tremont and Southwest Harbor and on the island of Mount Desert motor vehicles are barred from the highway under penalty of a fine of $20 for the first conviction and $50 for the second and every subsequent conviction.